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RECLAMATION AND DEVELOPMENT GRANTS PROGRAM

REPORT TO THE LEGISLATURE

Project Evaluations and Funding Recommendations

January 2005

**Montana Department of Natural Resources and Conservation
Conservation and Resource Development Division
1625 Eleventh Avenue
P.O. Box 201601
Helena, Montana 59620-1601**

ABBREVIATIONS

| | |
|------------------|---|
| ACM | Anaconda Copper Mining |
| AMRB | Abandoned Mines Reclamation Bureau, MT Department of Environmental Quality |
| ARARS | applicable, relevant and appropriate requirements |
| ARCO | Atlantic Richfield Company |
| BFLF | Brewery Flats Lewiston Facility |
| BLM | Bureau of Land Management, U.S. Department of the Interior |
| BOGC | Montana Board of Oil and Gas Conservation |
| CD | conservation district |
| CECRA | Comprehensive Environmental Cleanup and Responsibility Act of 1989 |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 |
| CES | cumulative effects study |
| cfs | cubic feet per second |
| CGA | controlled groundwater area |
| CH ₄ | methane |
| COC | contaminants of concern |
| COE | U.S. Army Corps of Engineers |
| CO ₂ | carbon dioxide |
| cy | cubic yards |
| DEQ | Montana Department of Environmental Quality |
| DFWP | Montana Department of Fish, Wildlife and Parks |
| DOE | U.S. Department of Energy |
| DNRC | Montana Department of Natural Resources and Conservation |
| DSL | Montana Department of State Lands |
| ECA | Environmental Contingency Account |
| EEE/CA | Expanded Engineering Evaluation/Cost Analysis |
| EIS | environmental impact statement |
| EMB | Environmental Management Bureau, MT Department of Environmental Quality |
| EPA | U.S. Environmental Protection Agency |
| FY | fiscal year |
| GIS | geographic information system |
| GHG | greenhouse gases |
| GWIC | Groundwater Information Center, Montana Bureau of Mines and Geology |
| H ₂ S | hydrogen sulfide |
| MBMG | Montana Bureau of Mines and Geology |
| MCA | <i>Montana Code Annotated</i> |
| mg/l | milligrams per liter |
| MSU | Montana State University |
| MTS | MTS Recyclers |
| MWCB | Mine Waste Cleanup Bureau, MT Department of Environmental Quality |
| NCOC | National Carbon Offset Coalition |
| NCP | National Contingency Plan |
| NEPA | National Environmental Policy Act |
| PA | Preliminary Assessment |
| PGC | Pegasus Gold Corporation |
| PVC | polyvinylchloride |
| RDGP | Reclamation and Development Grants Program |
| RIT | resource indemnity trust |
| ROD | Record of Decision |
| SEIS | Supplemental Environmental Impact Statement |
| USBR | U.S. Bureau of Reclamation |
| USGS | U.S. Geological Survey |
| VCP | voluntary cleanup plan |

| | |
|------|---|
| VCRA | Voluntary Cleanup and Redevelopment Act |
| WPPS | Well Plugging Prioritization System |
| ZMI | Zortman Mining, Inc. |

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PROJECTS SUBMITTED FOR FUNDING IN THE 2007 BIENNIUM

Following is a list of projects submitted for funding in the 2007 biennium. For easy reference, the list is alphabetized by the names of the project sponsors. However, in Chapter II the project abstracts, assessments, and recommendations are presented in the order of their ranking by the Department of Natural Resources and Conservation and the Governor.

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CHAPTER I

PROGRAM DESCRIPTION AND PROCEDURES

Program Information

The Reclamation and Development Grants Program (RDGP) is a state-funded grant program designed to fund projects that *"indemnify the people of the state for the effects of mineral development on public resources and that meet other crucial state needs serving the public interest and the total environment of the citizens of Montana"* (90-2-1102, MCA). The program, established by the 1987 Montana Legislature, is administered by the Montana Department of Natural Resources and Conservation (DNRC).

In February 2004, DNRC mailed application materials to all Montana communities, counties, the university system, conservation districts, state agencies, state legislators, and others who might benefit by program participation. The application deadline was May 15, 2004. DNRC received 21 applications for RDGP funding totaling nearly \$5.5 million. These projects are listed alphabetically by applicant on pages vii and viii.

The funding source for this program is the interest income from the resource indemnity trust (RIT) fund. This fund, established by 15-38-201, MCA, receives proceeds from taxes levied on mineral production. Since 1986, 175 projects totaling more than \$31 million have been authorized for funding by previous legislatures. The 1993 Legislature directed that, beginning in state fiscal year (FY) 1996, a minimum of \$3 million be allocated for grants. In 1993, the legislature also directed DNRC to give priority to grant requests from the Montana Board of Oil and Gas Conservation (BOGC). This priority is not to exceed \$600,000 for the biennium and does not preclude BOGC from submitting additional grant requests. Additional BOGC grant requests are received and ranked by DNRC in the same manner as all other grant requests submitted. DNRC is also statutorily required to give priority to abandoned mine reclamation projects in the amount of \$800,000 (MCA 90-2-1113 [3]). These projects may not include personnel costs or operating expenses.

The Reclamation and Development Grants Program Act requires that the Governor submit, by the first day of each regular session of the legislature, a list of all grant proposals received with his or her recommended priorities for funding (see Table 1). Administrative rules further provide that DNRC must furnish to the legislature a status report on previously funded projects, which is here provided in Chapter III. This report is the result of those directives.

Project Eligibility

The following excerpt from the Reclamation and Development Grants Program Act (90-2-1112, MCA) establishes criteria that projects must meet in order to be eligible for funding.

1. *Except as provided under subsection (2), to be eligible for funding under the Reclamation and Development Grants Program, the proposed project must provide benefits in one or more of the following categories:*
 - a. *Reclamation of land, water, or other resources adversely affected by mineral development;*
 - b. *Mitigation of damage to public resources caused by mineral development;*
 - c. *Research, demonstration, or technical assistance to promote the wise use of Montana minerals, including efforts to make processing more environmentally compatible;*
 - d. *Investigation and remediation of sites where hazardous wastes or regulated substances threaten public health or the environment, and*
 - e. *Research to assess existing or potential environmental damage resulting from mineral development.*

2. *If there is a crucial state need to protect Montana's environment, the department may evaluate and the Governor may recommend that the legislature approve funding for projects in addition to those described in subsection (1).*

Applicant Eligibility

Any department, agency, board, commission, or other division of state government or any city, county, or other political subdivision or tribal government within the state may apply for a grant from the Reclamation and Development Grants Program.

Funding Limits

No grant may exceed \$300,000. An applicant proposing more than one project may submit a separate application for each. There is no minimum funding limit.

Application Review and Ranking Procedures

The grant applications were evaluated for the technical and financial feasibility of the proposed projects, public benefits to be provided, need and urgency, and impacts on the environment. Reviewers included staff members of the Conservation and Resource Development Division of DNRC and federal, state, and university personnel having expertise in specific project areas. For each application, a descriptive project assessment was written incorporating the concerns, ideas, and comments of the project reviewers.

More funds are requested than are available. Therefore, the department ranks feasible projects, so that it can recommend funding priority and funding level to the Governor and the legislature. Evaluation criteria established by the 1987 Legislature include, but are not limited to:

1. The degree to which the project will provide benefits in its eligibility category or categories.
2. The degree to which the project will provide public benefits.
3. The degrees to which the project will promote, enhance, or advance the policies and purposes of the Reclamation and Development Grants Program.
4. The degree to which the project will provide for the conservation of natural resources.
5. The degree of need and urgency for the project.
6. The extent to which the project sponsor or local entity is contributing to the costs of the project or is generating additional non-state funds.
7. The degree to which jobs are created for persons who need job training, receive public assistance, or are chronically unemployed.
8. Any other criteria DNRC considers necessary to carry out the policies and purposes of the Reclamation and Development Grants Program.

Under the ranking system, a proposal could receive a maximum of 215 points. Specific criteria were established for each category to provide consistency. Of the following criteria, public benefits and need and urgency were weighted most heavily.

| | <u>Maximum Points</u> <u>Possible</u> |
|--|--|
| 1. Public benefits | 90 |
| 2. Need and urgency | 50 |
| 3. Appropriateness of technical design | 40 |
| 4. Financial feasibility | 15 |
| 5. Project management organization | <u>20</u> |
| Total possible points: | 215 |

Recommendations

After ranking the projects and recommending funding, the Conservation and Resource Development Division made its recommendations to the DNRC director. The director then presented the recommendations by DNRC to the Governor. The final ranking of the proposed projects is presented in Table 1, along with funding recommendations.

An appropriations bill listing the Governor's recommendations will be introduced to the 2005 Legislature. By appropriation or other means, the legislature may approve grants for those projects it finds consistent with the policies and purposes of RDGP.

TABLE 1

RANKING AND FUNDING RECOMMENDATIONS

| RANK | APPLICANT | AMOUNT REQUESTED | AMOUNT RECOMMENDED | CUMULATIVE AMOUNT |
|--|--|--------------------|--------------------|--------------------|
| 1 | MT Board of Oil and Gas Conservation 2005 Eastern District Orphaned Well Plug & Abandonment & Site Restoration | \$300,000 | \$300,000 | \$300,000 |
| 2 | MT Board of Oil and Gas Conservation 2005 Northern District Orphaned Well Plug & Abandonment & Site Restoration | \$300,000 | \$300,000 | \$600,000 |
| 3 | MT Department of Environmental Quality Bluebird Mine Reclamation | \$300,000 | \$300,000 | \$900,000 |
| 4 | MT Department of Environmental Quality Frohner Mine Reclamation | \$300,000 | \$300,000 | \$1,200,000 |
| 5 | MT Department of Environmental Quality Buckeye Mine & Millsite Reclamation | \$300,000 | \$300,000 | \$1,500,000 |
| 6 | Lewistown, City of Reclamation of Brewery Flats on Big Spring Creek | \$300,000 | \$300,000 | \$1,800,000 |
| 7 | MT Department of Natural Resources and Conservation St. Mary Studies and Design | \$300,000 | \$300,000 | \$2,100,000 |
| 8 | Butte-Silver Bow Local Government Belmont Shaft Failure & Subsidence Mitigation | \$300,000 | \$300,000 | \$2,400,000 |
| 9 | Pondera County Oil & Gas Well Plug & Abandon | \$100,000 | \$100,000 | \$2,500,000 |
| 10 | Custer County CD Yellowstone River Resource Conservation Project | \$299,965 | \$299,965 | \$2,799,965 |
| 11 | Teton County Oil & Gas Well Plug & Abandon | \$50,000 | \$50,000 | \$2,849,965 |
| 12 | Toole County 2005 Plugging & Abandonment Aid to Small Independent Oil Operators | \$300,000 | \$150,000 | \$2,999,965 |
| 13 | MT Department of Environmental Quality Zortman Mine - Completion of Reclamation Alternative Z6 | \$300,000 | \$300,000 | \$3,299,965 |
| 14 | Butte-Silver Bow Local Government Excelsior Reclamation | \$129,800 | \$129,800 | \$3,429,765 |
| 15 | Powell County Wetland Reclamation and Redevelopment | \$212,950 | \$240,850 | \$3,670,615 |
| 16 | MT Department of Environmental Quality MTS Tire Recyclers Cleanup | \$300,000 | \$300,000 | \$3,970,615 |
| | TOTAL | \$4,092,715 | \$3,970,615 | \$3,970,615 |
| Projects Below This Line Were Not Recommended For Funding | | | | |
| NF | MSU Geologic Potential of Carbon Sequestration in MT | \$299,166 | \$0 | \$3,970,615 |
| NF | MT Department of Environmental Quality Former Harlem Equity Co-op Bulk Plant | \$285,572 | \$0 | \$3,970,615 |
| NF | MT Department of Environmental Quality Landusky Mine – Surface & Groundwater Interactions in Swift Gulch and Landusky Pit | \$300,000 | \$0 | \$3,970,615 |
| NF | MT Department of Environmental Quality Zortman and Landusky Mines - Supplemental Funding for Near-Term Water Treatment | \$300,000 | \$0 | \$3,970,615 |
| NF | Sheridan County CD Reclaiming Oilfield Brine-Contaminated Soils - Phase II | \$206,069 | \$0 | \$3,970,615 |
| | TOTAL | \$5,483,522 | \$3,970,615 | \$3,970,615 |

CHAPTER II

PROJECT ABSTRACTS, EVALUATIONS, AND RECOMMENDATIONS FOR THE 2007 BIENNIUM

These evaluations are based on review of the projects by DNRC. The first 16 evaluations of recommended projects are presented in the order of their ranking. Of the \$3,970,615 recommended for these projects, a statutory maximum of \$3.0 million may be awarded by the 2005 Legislature. To find any particular evaluation quickly, simply consult the alphabetical listing of projects by the name of the applicant on pages vii and viii.

For projects recommended for RDGP funding, "TOTAL PROJECT COST" is the sum of "OTHER FUNDING SOURCES" plus the AMOUNT RECOMMENDED.

Part I. Projects Recommended for Funding

Project Nos. 1 & 2

Applicant Name Montana Board of Oil and Gas Conservation
Project Names 2005 Eastern District Orphaned Well Plug and Abandonment, and Site Restoration
and
2005 Northern District Orphaned Well Plug and Abandonment, and Site Restoration

Amount Requested \$ 600,000
Other Funding Sources \$ 56,615 Applicant
Total Project Cost \$ 656,615

Amount Recommended \$ 600,000

Project Abstract (prepared and submitted by applicant)

The purpose of this grant request is to secure funding to properly plug and abandon orphaned oil and gas wells, and leaking orphaned abandoned wells, and to perform surface reclamation. The wells are uneconomic and have the potential to cause damage to subsurface formations, the state's water, and the surface around each well.

The Board of Oil and Gas Conservation (BOGC) will eliminate the threat of contamination by soliciting bids to plug and abandon the wells. Under the supervision of BOGC staff, the successful bidder will properly plug and abandon each well, dispose of and/or remediate contaminants, and reclaim the surface location.

The wells produced oil and gas or were plugged in the past. The operators could no longer afford to produce the wells, and the wells were shut in. The companies' assets will not cover the liabilities to creditors, leaving the operators insolvent. Since the operators are currently insolvent or long since defunct, responsibility for the wells and any potential environmental damage rests with BOGC and the State of Montana. The wells will be properly plugged and abandoned when funding is made available.

The orphaned wells are located throughout Montana. In most cases, the wells that present the highest potential to damage the environment because of leaking or loss of mechanical integrity will be plugged first.

The project is estimated to take 24 months. The work will generally begin during the first suitable field season following the availability of funding.

Technical Assessment

The priority and funding amount for BOGC applications, 2005 Eastern District and 2005 Northern District, are established pursuant to 90-2-1113(2) (a-c), MCA. For reference, this statute states:

(2)(a) Subject to the conditions of this part, the department shall give priority to grant requests, not to exceed a total of \$600,000 for the biennium, from the Board of Oil

and Gas Conservation. The Board of Oil and Gas Conservation shall use a grant that received priority under this subsection (2)(a) for oil and gas reclamation projects. The board may use a maximum of 2.5% of the amount of a grant for administrative costs associated with implementing the projects covered in the grant.

- (b) Any unobligated fund balance of a grant that received priority under subsection (2)(a) remaining at the end of the current biennium must be included as part of the \$600,000 limitation for the next biennium.
- (c) The priority given to the Board of Oil and Gas Conservation under subsection (2)(a) does not preclude the Board of Oil and Gas Conservation from submitting additional grant requests. The department shall evaluate additional grant requests from the Board of Oil and Gas Conservation in accordance with the provisions of subsection (1).

These two applications represent 47 wells located in Dawson (9 wells), Glacier (10 wells), McCone (1 well), Phillips (3 wells), Richland (5 wells), Toole (10 wells) and Valley (9 wells) Counties. All of the wells have been evaluated using Montana's Well Plugging Prioritization System (WPPS). WPPS rates such factors as the threat the well poses to groundwater and surface water, mechanical condition of the wellhead casing, public safety, and potential for cross contamination of mineral-bearing formations and aquifers. All of these wells are leaking some combination of oil, gas, and/or water to the ground surface. Delays in proper plugging and abandonment of these wells will result in continued threats to the environment and increased future costs.

The wells are abandoned, and all attempts by BOGC to hold a party responsible for plugging these wells have been unsuccessful. The plugging of these wells involves standard oil-field equipment and procedures and will be performed by qualified oil-field plugging contractors.

Financial Assessment

The two RDGP grant applications are for \$300,000 each. Totals for major budget categories and matching contributions are as follows:

| | RDGP | Matching Funds | Total |
|------------------------|------------------|-------------------|------------------|
| Salaries and Wages | \$ 0 | \$ 35,240 | \$ 35,240 |
| Employee Benefits | \$ 0 | \$ 9,091 | \$ 9,091 |
| Contracted Services | \$600,000 | \$ 0 | \$600,000 |
| Supplies and Materials | \$ 0 | \$ 1,000 | \$ 1,000 |
| Communications | \$ 0 | \$ 505 | \$ 505 |
| Travel | \$ 0 | \$ 10,779 | \$ 10,779 |
| Total | \$600,000 | \$ 56,615 | \$656,615 |

Cost estimates are based on bids on past projects contracted by BOGC and are reasonable for the work performed. As with any oil- and- gas-plugging project, unknown or unforeseen circumstances may be encountered underground, and costs may vary considerably.

The 2005 Eastern and 2005 Northern applications constitute the BOGC \$600,000 priority allocation for the 2007 biennium.

Environmental Evaluation

No long-term adverse environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and destroyed vegetation on access routes would be reclaimed upon project completion, and any debris would be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust, emissions from combustion engines) would be minimal, provided that equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition. If the sites involve cleanup and disposal of drilling fluids, oil sludge, brine wastes, or other contaminants, these materials must be identified and characterized, and this information must be used to develop site-specific reclamation plans. Depending on the material and contaminants encountered, remedial action may involve burning, burial, land farming, and addition of soil amendments for materials disposed of on-site, or it may involve hauling materials to a licensed off-site landfill or waste disposal facility. If disposal poses unusual difficulty or necessitates remedial actions not normally implemented by the board, appropriate regulatory or reclamation experts would need to be contacted.

Public Benefits Assessment

The proper plugging and abandonment of these wells benefit all Montanans by eliminating severe impacts to groundwater and surface water caused by oil-field development activity. Statewide, many abandoned and unplugged wells threaten water supplies used for drinking water, stock watering, and irrigation purposes. Safety hazards (e.g., open holes, gas emissions, blowout potential) affect not only humans, but also stock and wildlife. Proper plugging eliminates site-specific problems and helps ensure long-term protection of soil, water, and vegetative resources. Moderate economic benefit will be realized by contractors, equipment suppliers, and other area retailers.

Recommendation

As per the priority contained in 90-2-1113 (2), a grant of up to \$600,000 is recommended for the 2005 Eastern and 2005 Northern District projects, contingent upon DNRC approval of the project scope of work and budget.

Project No. 3

Applicant Name Montana Department of Environmental Quality
Project Name Bluebird Mine Reclamation

Amount Requested \$ 300,000
Other Funding Sources \$ 680,000 Applicant
Total Project Cost \$ 980,000

Amount Recommended \$ 300,000

Project Abstract (prepared and submitted by applicant)

The purpose of this project is to address human health and safety hazards associated with exposed and accessible heavy metals and acid mine drainage originating from the Bluebird Mine. The Bluebird Mine site contains 71,000 cubic yards of waste rock that is currently deposited in the Curtain Creek drainage and eroding into Spring Creek and, ultimately, Prickly Pear Creek. Eroded waste rock is visible along the Curtain Creek stream bank for a distance of 2,500 feet below the mine site, and dissolved metals and acid water can be detected several miles downstream from the mine. The site wastes contain significantly elevated levels of arsenic, lead, mercury, zinc, copper, and manganese. Site surface water and groundwater degradation have been documented. Site water sampling clearly indicates contaminant migration off-site. Contaminated soil and waste have affected trees, grasses, and shrubs; much of this vegetation has succumbed to heavy metal poisoning and acidity. The Bluebird Mine ranks at 20 of 270 sites in the Montana Department of Environmental Quality's (DEQ) *Abandoned Hardrock Mine Priority Sites 1995 Summary Report*.

The primary objectives of this project are to (1) remove solid media contaminant sources located at the Bluebird Mine site and those materials that have eroded into Curtain Creek, and (2) dispose of these wastes in a constructed repository. Site surface water would be isolated from contact with contaminated mine wastes, and all disturbed areas would be regraded, topsoiled, and revegetated. When the above tasks are completed, heavy metals exposure and migration would be significantly reduced or eliminated. Water quality would be improved, and the site and lower stream areas would again be able to support a native stand of vegetation species.

DEQ's Mine Waste Cleanup Bureau (MWCB) would be responsible for conducting this reclamation project.

The Bluebird Mine is located approximately 3.5 miles west of the townsite of Wickes, Montana, in the Colorado Mining District, Jefferson County. Specifically, the Bluebird Mine occupies approximately 5 acres in the headwaters of Curtain Creek in Section 13, Township 7 North, Range 5 West.

All environmental and investigation tasks for this project are currently in progress. The Expanded Engineering Evaluation and Cost Analysis (EEE/CA), engineering design, bid package, and bidding process need to be completed, which would require 16 to 20 months. Once construction is implemented, the project should be completed in 120 consecutive calendar days. Following construction, a final report would be completed in two months.

Technical Assessment

Currently, approximately 71,000 cubic yards of waste rock are associated with this abandoned mine site. Testing revealed that the following elements were present and elevated at least three times

their background levels: arsenic - 587 mg/kg; zinc – 1,919 mg/kg; copper - 441 mg/kg; and lead - 4,990 mg/ kg. Three discharging adits are presently contributing acid mine drainage that exceeds acute and chronic aquatic life criteria for cadmium, copper, zinc, iron, and lead. Detailed information on all aspects of the site is available in the Hazardous Materials Inventory Site Summary, which is appended to the grant application.

The reclamation process used by DEQ's MWCB is designed to comply with the requirements of the National Contingency Plan (NCP), the Comprehensive Environmental Cleanup, Response, Compensation, and Liability Act of 1980 (CERCLA), and the Montana Comprehensive Environmental Cleanup and Responsibility Act of 1989 (CECRA). Certain aspects of the process have been streamlined to meet the regulatory and functional needs of cleaning up relatively small abandoned mine sites that are generally situated in remote locations. DEQ's MWCB conducted initial investigations at the Bluebird Mine in 1992.

The EEE/CA for the Bluebird Mine is currently being developed by a private consultant. It will address reclamation alternatives at the site that will include:

- No action.
- Institutional controls.
- Surface controls.
- Containment.
- Excavation and off-site disposal.

Selection of a preferred option for cleanup will be based on the following NCP criteria:

- Overall protection of human health and the environment.
- Compliance with state, federal, and local rules and regulations.
- Long-term effectiveness and permanence.
- Reduction of toxicity, mobility, and volume through treatment.
- Short-term effectiveness.
- Implementability.
- Cost.
- Community acceptance.

The information furnished by DEQ supports the ranking and priority of this site. High levels of heavy metals (cadmium, mercury, iron, copper, lead, zinc), plus arsenic, present significant threats to human health and the environment. For RDGP review and evaluation purposes, the application presents sufficient documentation to justify funding in the \$300,000 amount requested.

Financial Assessment

The estimated total project costs of \$980,000 are based on anticipated site complexity, necessary engineering investigations and design, construction effort, material quantities, and expected construction difficulties. An administrative grant issued to DEQ by the Federal Office of Surface Mining will provide for all costs of in-house personnel, including salary, employee benefits, supplies, materials, communication, travel, rent, utilities, miscellaneous expenses, and indirect costs. A second project grant issued to DEQ-MWCB will provide for costs associated with engineering design and construction specific to the Bluebird Mine Reclamation Project. RDGP funding would be used to supplement the contracted construction costs.

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|------------------|---------------------------|------------------|
| Contracted Services | \$300,000 | \$680,000 | \$980,000 |
| Total | \$300,000 | \$680,000 | \$980,000 |

Environmental Evaluation

The project would reduce contaminant mobility at the site by removing the highest risk solid media contaminant sources and disposing of these wastes in an engineered repository. This action should result in long-term beneficial impact to Curtain Creek, Spring Creek, and the surrounding area. The construction would likely be of short duration (120 days) and would be completed in a single field season. Short-term impacts, such as dust and increased vehicle traffic, are expected. A 310 permit and 3A authorization would likely be required. Mitigation of adverse impacts will be addressed in the site environmental assessment to be prepared by DEQ.

Public Benefits Assessment

This project would address human health and safety risks associated with heavy metals contamination at the site. The project would eliminate the possibility of human contact with contaminated soils, waste rock, and tailings. The project would also reduce or eliminate the possibility of human contact with waterborne heavy metal contamination.

Sites hazards and contamination, both on- and off-site, would be reduced or eliminated. Public lands and waters would be enhanced. Aesthetic beauty would be restored to the landscape, and a short-term economic benefit would be realized.

Indirect benefits of the site reclamation would include secondary economic benefits resulting from project construction, water quality enhancement of the receiving streams, and economic benefits from increased use of the general area.

Recommendation

This project is given priority under 90-2-1113 (3), MCA, which states that "the department shall give priority to grant requests not to exceed \$800,000 for abandoned mine reclamation projects." A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 4

Applicant Name Montana Department of Environmental Quality
Project Name Frohner Mine Reclamation

Amount Requested \$ 300,000
Other Funding Sources \$ 336,453 Applicant
Total Project Cost \$ 636,453

Amount Recommended \$ 300,000

Project Abstract (prepared and submitted by applicant)

The Frohner Mine Site is an abandoned hard rock mine that consists of seven waste rock dumps, one mill tailings pile, numerous streamside tailings deposits, and two discharging adits, near a small perennial stream (Frohner Meadows Creek), which flows adjacent to the lower portion of the site. The waste rock and tailings are contaminated with heavy metals, which have eroded and leached into the surrounding soil, groundwater, and surface water.

The goals of the cleanup of the Frohner Mine Site Reclamation Project will be to improve human health and the environment of the area by isolating the wastes and contamination from the natural elements and the general public. Reclamation will be accomplished by removal of the wastes from the waterways and adjacent areas and placement of the wastes in a capped offsite repository located at the Luttrell Pit.

The DEQ MWCB's Abandoned Mine Section has completed 23 hard rock mine reclamation projects similar to the Frohner Mine Site since 1995. A number of the projects have been completed in cooperation with other agencies such as the U.S. Bureau of Land Management, the U.S. Forest Service, and the Montana Department of Fish, Wildlife and Parks.

The Frohner Mine Site is located in the Lump Gulch portion of the Clancy-Lump Gulch Mining District in Jefferson County, Montana (Chessman Reservoir USGS 7.5 Minute Quadrangle). The site consists of 12 patented mining claims, on privately owned land, within and bordered by lands administered by the Helena National Forest, Helena Ranger District. Elevation at the Frohner Mine Site is 7,200 feet above mean sea level and greater. The legal description of the Frohner Mine Site is Township 8 North, Range 5 West, SE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 15 and the SW $\frac{1}{4}$ of Section 14 of the Montana Principle Meridian.

The construction project is estimated to take approximately 60 days to complete, which will include road improvements, removal and transportation of the wastes, regrading and reconstruction of the removal areas, and reseeding of these areas.

Technical Assessment

The Frohner Mine covers approximately 5 acres and harbors an estimated 13,000 cubic yards of waste rock and two discharging mine adits. Site waste sources contain significantly elevated levels of arsenic, copper, mercury, lead, and antimony.

Metal contaminated waste rock and mine discharge water have been impacting the project area since mining began on the site in the 1880s. Site contaminated materials (tailings, waste rock, and mine water) have continued to degrade both on- and off-site resources since the site was abandoned in 1929. The 1997 Abandoned Hardrock Mines Priority Sites inventory ranked Frohner

24th of 282 mine/mill sites statewide. Scoring criteria included human health and safety hazards present at the site, as well as environmental degradation resulting from mine wastes.

DEQ, as a part of the DEQ Hard Rock Cleanup Procedure, has developed the Frohner Mine Site Expanded Engineering Evaluation/Cost Analysis (EEE/CA) by Pioneer Technical Services (April 2004), which was submitted as a part of this application. The Frohner EEE/CA and the enclosed risk assessment outline a complete cost/benefit of the all the alternatives that were analyzed, and this analysis was used to select the preferred cleanup alternative.

In order the for Frohner Project to be completed, the following tasks must be completed as a part of the DEQ Hard Rock Cleanup Procedure (some of the tasks have already been completed):

- Preliminary Assessment (completed).
- Ownership/Operator Report (completed).
- Community Relations Plan (completed).
- Reclamation Work Plan (completed).
- Site Characterization (completed).
- Expanded Engineering Evaluation/Cost Analysis (completed).
 - Human Health and Ecologic Risk Assessment.
 - Alternative Development.
- Public meeting and comment period.
- Submission to Office of Surface Mining for authorization.
- Bid Package preparation.
- Bidding and awarding of the project.
- Project Construction.

The preferred alternative in the Frohner Mine Site EEE/CA (Pioneer 2004) outlines the cost and benefits of the removal of these contaminated wastes. The implementation of the preferred alternative has the waste being excavated and hauled to the Luttrell Pit thereby eliminating the source of the problem. Removal of the contamination from the site will improve the ability of the site to grow vegetation. Removal of the waste will also result in long-term improvements in the surface and groundwater quality and will have immediate improvements to the environment and a lasting positive effect on the Lump Gulch and Prickly Pear drainages. These improvements in on-site water quality will in turn improve off-site water quality and increase the ability of the area to have other land uses, such as wildlife habitat and fishing, which is a benefit to area land users.

DEQ's goal for every abandoned mine reclamation project is to improve human health and the environment on the area that is affected by mining wastes. To ensure that this is accomplished for the Frohner Mine, DEQ conducted a Human Health and Ecologic Risk Assessment on the site. Human health and environmental threats associated with exposure to mine waste at the Frohner Mine site have been evaluated through a risk assessment process using site-specific chemical concentrations and applicable exposure pathways. This assessment follows risk assessment procedures for abandoned mine sites as developed by DEQ. The baseline human health risk assessment examines the effects of taking no further remedial action at the site. This abbreviated assessment involves two steps, which are hazard identification and risk characterization. These tasks are accomplished by evaluating available data and selecting contaminants of concern (COCs), comparing those concentrations to previously derived cleanup goals, and characterizing overall risk by integrating the results of the comparison.

General problems at the Frohner Mine site that could impact human health include elevated concentrations of metals in waste materials, surface water, and stream sediments. The easily

accessible waste materials may result in significant health-related consequences to the human population.

DEQ will conduct inspections of the site and perform maintenance on the site for a period of three years after the end of the project. Typical maintenance for his type of project is weed control, occasional sections that require re-fencing, and small areas that require reseeding. However, any maintenance that is required will be completed by DEQ.

It should be noted that there are two major obstacles to recommending funding for this project: (1) the federal Abandoned Mine Lands program must be reauthorized in Congress to ensure MWCB operation and match funds, and (2) DEQ and EPA must settle the issue of using the Luttrell Pit as a repository, free of charge to the state, which owns the facility.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|------------------|---------------------------|------------------|
| Contracted Services | \$300,000 | \$336,453 | \$636,453 |
| Total | \$300,000 | \$336,453 | \$636,453 |

DEQ is requesting \$300,000 RDGP funds for the construction of the Frohner Reclamation Project. No other costs that are associated with, or that will be incurred by DEQ such as the development, investigation, or management of the project other than the direct construction of the project, are requested as a part of this grant application. An estimated total construction cost for the preferred alternative has been developed as a part of the Frohner Mine site EEE/CA completed in April 2004. The EEE/CA estimates a total of \$636,453 would be needed to construct the project as defined in the Preferred Alternative (Alternative 6). DEQ is proposing to supplement the RDGP funding of \$300,000 with \$336,453. Any construction costs that exceed the total estimated costs of \$636,453 will be provided by DEQ. Overall, the budget is well documented and reasonable for the work to be performed.

Environmental Evaluation

The project would reduce contaminant mobility at the site by removing the highest risk solid media contaminant sources and disposing of these wastes in an engineered repository. This action should result in a long-term beneficial impact to Frohner Meadows Creek and the surrounding area. The construction is likely to be of short duration (60 days) and will be completed in a single field season. Short-term impacts such as dust and increased vehicle traffic are expected. Mitigation of adverse impacts would be addressed in the site environmental assessment to be prepared by DEQ.

Public Benefits Assessment

This project would address human health and safety risks associated with heavy metals contamination at the site. The project would eliminate the possibility of human contact with contaminated soils, waste rock, and tailings. The project would also reduce or eliminate the possibility of human contact with waterborne heavy metal contamination.

Sites hazards and contamination, both on- and off-site, would be reduced or eliminated. Public lands and waters would be enhanced. Aesthetic beauty would be restored to the landscape, and a short-term economic benefit would be realized.

Indirect benefits of the site reclamation would include secondary economic benefits resulting from project construction, water quality enhancement of the receiving streams, and economic benefits from increased use of the general area.

Recommendation

This project is given priority under 90-2-1113 (3), MCA, which states that "the department shall give priority to grant requests not to exceed \$800,000 for abandoned mine reclamation projects." A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 5

Applicant Name Montana Department of Environmental Quality
Project Name Buckeye Mine and Millsite Reclamation

Amount Requested \$ 300,000
Other Funding Sources \$ 500,000 Applicant
Total Project Cost \$ 800,000

Amount Recommended \$ 300,000

Project Abstract (prepared and submitted by applicant)

The Buckeye Mine site is an inactive mine site currently ranked 19th on the Department of Environmental Quality's (DEQ) abandoned/inactive priorities list. The Buckeye Mine and Millsite is located near the town of Brandon, Montana, approximately 3 miles east-northeast of the town of Sheridan in Madison County. The site is situated within the E½, SE ¼ of Section 19, Township 4 South, Range 4. The Buckeye is located within the Mill Creek drainage, a tributary of the Ruby River. The Buckeye Mine and Millsite is located primarily on patented mining claims within public lands administered by the Bureau of Land Management. The site is comprised of four tailings ponds (including tailings from the former Brandon Millsite), five waste rock dumps, a small building, an ore chute/load out, and the former millsite. Three of the tailings ponds and four of the waste rock piles are located near an unnamed ephemeral drainage. The other tailings pond and waste rock are situated on the banks of Mill Creek. Preliminary waste volume estimates for the site includes 10,000 cubic yards of tailings and 4,350 cubic yards of waste rock.

The Montana Department of Environmental Quality/Mine Waste Cleanup Bureau (MWCB) has been working with the Ruby Valley Conservation District and the primary landowner to address problems associated Buckeye Mine and Millsite. Mine reclamation would be conducted by MWCB and would most likely consist of mine waste consolidation into a single mine waste repository with an impermeable cap to be placed over the repository area, thereby eliminating receptor contact with the contaminated mine wastes. Upon completion of reclamation activities, the site will be revegetated with native plant species. In addition, the primary landowner and the Ruby Valley Conservation District have expressed a desire to provide public access for fishing upon completion of the reclamation. DEQ will work cooperatively with the landowner and conservation district to facilitate this access. Project construction is estimated to take 60 days.

Technical Assessment

DEQ's, Mine Waste Cleanup Bureau uses the Abandoned Inactive Mine Cleanup Procedure to conduct removal actions on all hard rock mines. The procedure will be used to clean up the Buckeye Mine and Millsite. The first step in the procedure is to conduct a Preliminary Assessment, which entails mapping, sampling, scoring, and ranking of the site, which has been completed at the Buckeye Mine and Millsite. A Current and Past Owner/Operator Report has been developed. In addition, the Reclamation Work Plan, Laboratory Analytical Plan, Field Sampling Plan, Quality Assurance Plan, and Health and Safety Plan have been prepared. The Site Characterization and site survey for the Buckeye Mine and Millsite is to be conducted during the summer and fall of 2004. This will involve a detailed physical and chemical characterization of the mine site. Upon completion of the above tasks, an Expanded Engineering Evaluation/Cost Analysis (EEE/CA) for the site, which analyzes completely the alternatives for reclamation and identifies all Applicable and Relevant and Appropriate Requirements (ARARS), will be prepared. Some of the ARARS that

typically apply are: Section 106 of the National Historic Preservation Act, the Clean Water Act, and the Endangered Species Act. The EEE/CA will be completed by late 2004.

Upon completion of the Draft EEE/CA, a public meeting will be held to explain the preferred alternative and take public comments. The public comment period usually lasts for 30 days after the public meeting. Taking into account all comments, the Final EEE/CA is produced and the reclamation alternative selected. The project is then engineered and designed and the bid package is put out for bids. DEQ accepts the lowest qualified bidder to construct the project.

The Buckeye Mine and Millsite Reclamation Project EEE/CA will examine selected reclamation alternatives, the cost of the alternatives, and the pros and cons of each alternative. The selected alternative will meet the overall goal of the project, that being to minimize and reduce the risk to human health and the environment resulting from the contaminants on the sites. The cost of the Buckeye Mine and Millsite Reclamation Project is approximately \$800,000. The final project cost for this phase may be higher or lower, depending on the specific selected alternative. The health benefits are hard to quantify, but one of the direct benefits derived from the reduction of contaminants will likely be the potential health improvement of those who may visit the site. Other benefits would be improved water quality, improved recreational opportunities, improved air quality, and improved wildlife habitat. An indirect benefit may likely be the reduced costs of health care due to the removal and isolation of the mining wastes.

The Preliminary Assessment for the Buckeye Mine and Millsite indicates that arsenic, cadmium, copper, lead, and zinc are substantially elevated in waste materials found at the mining complex. These easily accessible waste materials are found to present significant and adverse health related risks to the human population. A more detailed analysis and description of the Human Health Risk Assessment will be presented in the EEE/CA.

Due to the high levels of carcinogenic and toxic contaminants present on site, evidence of significant public use, and documented occurrences of off-site contaminant migration, this site is considered to present a significant threat to human health and environmental resources.

The projected start of construction is July 2005. The dates for the bids, the awarding of the contract, and the Notice to Proceed for the project will occur within a month or so prior to the start of construction. The project will probably be a 60-consecutive-day contract, with completion in the late summer or fall of 2005. Monitoring of the reclamation after construction will be conducted for three years.

| | |
|-----------------------|--------------------|
| Construction Complete | September 16, 2005 |
| Initial Inspection | September 16, 2005 |
| Final Report | November 30, 2005 |

All above dates are preliminary and are subject to change. This schedule is assuming a best-case scenario and that construction actually begins in 2005. Should the investigating and design activities fall behind schedule, construction will take place the following year (2006).

The information furnished by DEQ supports the ranking and priority of this site. For RDGP review and evaluation purposes, the application presents sufficient documentation to justify funding in the \$300,000 amount requested.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|------------------|---------------------------|------------------|
| Contracted Services | \$300,000 | \$500,000 | \$800,000 |
| Total | \$300,000 | \$500,000 | \$800,000 |

The budget for this project is reasonable and well developed. The estimated project cost of \$800,000 is based on site complexity, mine waste volume, necessary environmental and engineering investigations, construction material quantities, and construction difficulties. An administrative grant issued to the Montana Department of Environmental Quality/Mine Waste Cleanup Bureau by the Federal Office of Surface Mining Reclamation and Enforcement-Casper Field Office under the authority of Title IX of the Federal Surface Mining Control and Reclamation Act of 1977, will provide for all costs of in-house personnel including salary, employee benefits, supplies and materials, communication, travel, rent and utilities, miscellaneous expenses, and indirect costs. A second grant issued under the same statute will be provided for contracted environmental and engineering services and construction costs specific to the Buckeye Mine and Millsite Reclamation Project. RDGP funding will be used to supplement the contracted construction costs specific to this reclamation project.

Environmental Evaluation

The project would reduce contaminant mobility at the site by removing the highest risk solid media contaminant sources and disposing of these wastes in an engineered repository. This action should result in a long-term beneficial impact to Mill Creek and the surrounding area. The construction is likely to be of short duration (60 days) and will be completed in a single field season. Short-term impacts such as dust and increased vehicle traffic are expected. A 310 permit and 3A authorization would likely be required. Mitigation of adverse impacts would be addressed in the site environmental assessment to be prepared by DEQ.

The project will address human health and safety risks associated with the heavy metals contamination present at the site, most notably arsenic, cadmium, copper, lead, and zinc. The project will also significantly reduce the possibility of human contact with contaminated soils, mine waste rock, and tailings at this site. The project will also significantly reduce or eliminate potential human contact with surface water sources, which may be contaminated with these heavy metals.

Public Benefits Assessment

Site hazards and contamination, both on- and off-site, will be significantly reduced or eliminated. Both public and privately held lands will be enhanced. Aesthetic beauty will be restored to the landscape and a short-term economic benefit will be realized. In addition, the primary landowner and the Ruby Valley Conservation District have expressed a desire to provide public access for fishing upon completion of the reclamation. DEQ will work cooperatively with the landowner and conservation district to facilitate this access.

Indirect benefits of site reclamation will include secondary economics as a result of project construction, water quality enhancement to the receiving surface waters (Mill Creek to the Ruby

River to Jefferson River to the Missouri River), and economic benefits from increased use of the area.

The type of reclamation plan anticipated for the site has proven successful for significantly reducing or eliminating human health risks and/or environmental damage resulting from contaminated mine wastes. This type of reclamation project will provide both short- and long-term benefits to site visitors and the environment.

Recommendation

This project is given priority under 90-2-1113 (3), MCA, which states that "the department shall give priority to grant requests not to exceed \$ 800,000 for abandoned mine reclamation projects." A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 6

Applicant Name Lewistown, City of
Project Name Reclamation of Brewery Flats on Big Spring Creek

Amount Requested \$300,000
Other Funding Sources \$ 30,000 Applicant
\$151,000 Brownfields grant
Total Project Cost \$481,000

Amount Recommended \$300,000

Project Abstract (prepared and submitted by applicant)

This proposal is submitted by the City of Lewistown to the DNRC Reclamation and Development Grants Program. The proposal seeks \$300,000 to clean up heavy metal contaminated soil and other contaminants in the Brewery Flats section of Big Spring Creek at the southeastern edge of Lewistown in Township 15N, Range 18E, Section 23.

Big Spring Creek in the Brewery Flats area was straightened by the Milwaukee Railroad in the early 1900s. Brewery Flats once housed an oil refinery and has been used as a public dump site and a railroad-switching yard. The site is no longer used for these purposes. The railroad-switching yard was covered with smelter wastes resulting in heavy metal contamination in the surface soil. There were also diesel contaminated soil and waste, water treatment system sumps present at the site. In 2003, a removal action was completed that excavated and disposed of 403 tons of diesel-contaminated soil and 1,835 tons of heavy metal contaminated soil. Approximately 10,000 tons of heavy metal contaminated soil remains on-site.

The Montana Department of Fish, Wildlife and Parks recently restored meander bends of Big Spring Creek in Brewery Flats, the largest stream restoration project in Montana. Over the past several years, local citizens and Americorps volunteers constructed a hiking trail through the area to allow people from around the region to view and enjoy the newly restored stream.

Lewistown intends to use Brewery Flats as parkland for Montana citizens. The area will also be used to help teach school children from around the region about stream biology and restoration activities. However, the area remains contaminated with heavy metals that must first be cleaned up. This proposal will fund a two-year clean-up project that will be overseen by the Montana Department of Environmental Quality (DEQ).

Technical Assessment

The Brewery Flats Lewiston Facility (BFLF) is a Comprehensive Environmental Cleanup and Responsibility Act (CECRA; state superfund) facility that is being cleaned up under the Voluntary Cleanup and Redevelopment Act (VCRA). In 2000, the U.S. Environmental Protection Agency (EPA) completed two studies of the BFLF and surrounding area. In response to the EPA studies, subsequent investigations addressed data gaps identified by the Montana Department of Environmental Quality (DEQ). Currently, the only remaining tasks are to better define the lead contamination found in soils and confirm that the high iron and manganese concentrations in the groundwater are naturally occurring. Due to stricter lead cleanup requirements adopted by DEQ in late summer of 2003, the extent of the cleanup expanded beyond what was originally defined using the old criteria. These investigations will adequately define and document the problem.

The City of Lewistown is working closely with DEQ to develop a voluntary cleanup plan (VCP) under the VCRA program. The intent of the plan will be twofold. First, the VCP must demonstrate that all removal actions performed to date meet all applicable and relevant environmental requirements, criteria, and limitations. Secondly, the VCP must demonstrate that the remaining contamination found on the property that the city intends to purchase will not pose a threat to human health and the environment.

The technical data in the application clearly support the proposal. The various state and federal investigations and past removal actions support the commitment by the city to complete the cleanup at BFLF and add the property to the already successful Big Spring Creek recreation area.

Due to the proximity of the property to Big Spring Creek floodplain and the city, its value to the community as a natural area and outdoor classroom are significant. When weighed against the alternative, an abandoned industrial site hazardous to public health and welfare, the money invested will make the property useful and sustainable as a unique ecosystem near the city.

Without the city's interest in cleaning up the property, it could be years before the state can address cleanup at the BFLF. A 2005 brownfields grant will cover DEQ's oversight and document development (VCP, VCP Certification) for the project. The brownfields grant also will serve to fund additional investigation and/or removal of contamination that may be required. It may or may not cover all construction costs. The iron and manganese concentrations in the groundwater must still be documented as naturally occurring. Other similar situations are possible as well, simply as the result of ongoing cleanup activities. It is not unusual to have new areas of concern arise, usually much smaller in scope, during cleanup activities. The proposed lead contamination removal is an excellent example of finding more contamination than originally anticipated.

RDGP supports the efforts the city is making to cleanup the BFLF. Without this RDGP opportunity, funding would likely be insufficient and a successful cleanup would become problematic due to budgeting constraints.

Financial Assessment

The total overall budget for this project consists of the following (does not include the 2005 brownfields grant):

| | RDGP | Matching Funds | Total |
|------------------------|-------------------|---------------------------|-------------------|
| Salaries and Wages | \$ 6,000 | \$ 10,000 | \$ 16,000 |
| Employee Benefits | \$ 3,000 | \$ 4,000 | \$ 7,000 |
| Contracted Services | \$ 291,000 | \$ 0 | \$ 291,000 |
| Supplies and Materials | \$ 0 | \$ 400 | \$ 400 |
| Communications | \$ 0 | \$ 400 | \$ 400 |
| Travel | \$ 0 | \$ 200 | \$ 200 |
| Equipment | \$ 0 | \$ 10,000 | \$ 10,000 |
| Miscellaneous | \$ 0 | \$ 5,000 | \$ 5,000 |
| Total | \$ 300,000 | \$ 30,000 | \$ 330,000 |

The grant funds will be used to complete the VCP, engineering design, construction, and site demobilization. Any costs incurred by the applicant such as salary, travel, and outside expenses will be donated as in-kind match. A significant amount of money has been spent by the City of

Lewistown, EPA, DEQ, FWP, MBMG, and DNRC to investigate and remediate environmental contamination at Brewery Flats. These past expenditures include:

| | |
|--|------------------|
| • EPA Brownfields Assessment and Roundhouse Site Investigation | \$178,400 |
| • DFWP sampling | \$ 2,500 |
| • MBMG evaluation | \$ 2,800 |
| • DEQ groundwater investigation | \$ 13,000 |
| • City of Lewistown investigation and remediation support | \$ 15,000 |
| • DNRC Reclamation and Development Grant | <u>\$297,740</u> |
| • Total | \$509,440 |

The total RDGP funding that is being requested is \$300,000. A second EPA brownfields grant of \$151,000 has been received (August 2004) to complement the RDGP funding. The VCP will be submitted as a supplement to this application, probably this winter. If the results of the alternatives analysis in the VCP indicate that another remedial alternative is best for the site or if the volumes of waste are different from those listed above, the grant application will be modified to best reflect site requirements. Recent updates provided by the city indicate that the quantity of contaminated soil that may be removed is approximately 13,800 tons, up from the earlier estimate of 5,000 tons.

The budget for the actual cleanup appears to be in line with cleanups that are similar. However, the budget in the application significantly underestimates DEQ's oversight costs. VCP review (potentially at least two rounds of review), site visits during cleanup, and VCP Certification (both authoring of the document and DEQ review) are not included in the budget. As a rule, DEQ costs should be estimated at 10 to 15 percent of the total budget, a minimum cost of \$30,000 for a \$300,000 project. These costs will most likely be defrayed by DEQ's 2005 brownfields grant described above.

Environmental Evaluation

Removal of site contamination will result in long-term beneficial impacts to the site's soil, vegetation, and surface water resources. Site safety and health plans will be developed to help ensure protection of site workers. Adverse impacts will be of short duration and adequately mitigated by compliance with design plans and specifications. Impacts to groundwater are expected to be beneficial, but should be periodically monitored to assess the impact of planned removal actions.

Public Benefits Assessment

The project has been identified as a hazardous waste site by EPA and DEQ. Site investigations and sampling have documented areas of contamination from former industrial activities, including an oil refinery and a railroad switching yard that no longer exist at the site. The city and concerned citizens wish to complete cleanup on the site and use it for the following:

- Green belt natural area.
- Recreational activities, including hiking and bird watching.
- Environmental education and an outdoor classroom for area schools.
- Location for a trail loop system.
- Ball fields for local children.

The site is characterized by a broad floodplain with open meadows, a rich diversity of marshy and open-water wetlands, and abandoned river oxbows. Conservation of the natural resources is of utmost concern, and the community plans to keep most of the area as a floodplain and greenbelt.

Cleanup of the Brewery Flats will ensure public safety for all site users. Cleanup and removal of contaminated oils will have significant benefits for present and future generations and will create a greenbelt and natural area that adjoins the City of Lewistown. In addition, the adjacent DFWP-owned Brewery Flats fishing access site and stream restoration projects will result in much higher use in the near future. Cleanup of the subsequent green belt and natural area will augment public use of this property.

Recommendation

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 7

Applicant Name Montana Department of Natural Resources and Conservation (DNRC)
Water Resources Division

Project Name St. Mary Facilities Rehabilitation – Phase I: Study and Design

Amount Requested \$ 300,000

Other Funding Sources \$3,000,000 Federal Appropriation

Total Project Cost \$3,300,000

Amount Recommended \$ 300,000

Project Abstract (Prepared and submitted by applicant)

The St. Mary facilities, located on the Blackfeet Indian Reservation and owned by the U.S. Bureau of Reclamation (USBR), transfer water from the St. Mary River basin to the Milk River basin. The facilities have been in operation for over 85 years with only minor repairs and improvements since initial construction. Most of the structures have exceeded their design life and are critically in need of major repairs or replacement. Major structures consist of Sherburne Dam, St. Mary Diversion Dam and headworks, 29 miles of canal, St. Mary and Hall Coulee steel siphons, and five concrete drop structures. The siphons are plagued with slope stability problems, metal fatigue, concrete deterioration, and leaks. The concrete drop structures are severely deteriorated. Landslides along the canal route and numerous structural deficiencies make the canal unstable and restricted, and most of the wasteways are inoperable. The canal capacity has declined from its 850 cfs design to 670 cfs. The economy and culture of the entire Highline region was built around, and dependent upon this water supply. Without accelerated local, state, and federal action to rehabilitate these facilities, the aging system may soon suffer catastrophic failure.

State and local efforts, spearheaded by the Lt. Governor and Governor's office, are aggressively seeking federal funding for preplanning, design, and construction activities at these facilities.

Success of the overall project hinges on federal appropriations from Congress. The state-formulated proposal is separated into two phases:

Phase I: Planning and Design (\$9.5 million) and Phase II: Construction (estimated \$100 million)

The Phase I appropriation request has been drafted and submitted to Montana's three Congressional delegates. RDGP funds would provide state match contribution for Phase I. The Phase II proposal will be drafted and submitted to Congress upon completion of Phase I.

Phase I will be managed by DNRC; Phase II is expected to be managed by the USBR/DNRC, either of whom could assume the lead agency role. Both agencies have the full complement of necessary staff and expertise to manage the overall project. An aggressive five-year completion schedule for Phases I and II has been initiated by the state in an effort to avert a catastrophic failure.

Technical Assessment:

In operation for over 85 years, the St. Mary Facilities provide 70 percent of the flows to the Milk River Irrigation Project, an irrigation system constructed by USBR as one of its initial projects

shortly after the turn of the last century. The project supplies irrigation water and water for public drinking water systems across Montana's Highline.

The St. Mary facilities have structurally deteriorated to the point that ongoing repairs have become unfeasible; total failure of the system is a realistic possibility—probably within the next 10 years, according to the applicant.

The purpose of this application is to seek local match funding for \$3,000,000 in federal appropriations to evaluate the St. Mary facilities and any previous studies that have been performed by USBR. The results of the evaluation will be the selection of preferred alternatives to upgrade the facilities for another 50 to 100 years of operation. This activity will comprise Phase I of the entire project and will include a National Environmental Policy Act (NEPA) evaluation, preliminary cost estimates, and preliminary designs of specific facility improvements.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|------------------|---------------------------|--------------------|
| Contracted Services | \$235,000 | \$3,000,000 | \$3,235,000 |
| Communications | \$ 2,000 | \$ 0 | \$ 2,000 |
| Travel | \$ 13,000 | \$ 0 | \$ 13,000 |
| Lobbying | <u>\$ 50,000</u> | <u>\$ 0</u> | <u>\$ 50,000</u> |
| Total | \$300,000 | \$3,000,000 | \$3,300,000 |

Under the management of DNRC, a consultant will be responsible for conducting the fieldwork and compiling the data that will lead to a Preliminary Engineering Report, or feasibility study, for the project. Included will be a NEPA evaluation of the proposed project, a detailed evaluation of potential alternatives, the selection of preferred alternatives, cost estimates and present worth analyses for the potential alternatives, a detailed cost estimate for preferred alternatives, and preliminary designs for the preferred alternatives. The costs for feasibility studies of this type average 3 percent to 5 percent of the total project cost. Based on \$100,000,000 for the cost of the project, the estimated cost for Phase I of the project is reasonable.

Environmental Evaluation

Adverse environmental impacts associated with this project will be minor if they exist at all. Temporary access roads, temporary impacts during geotechnical investigation (drill rig access), dust, and stream crossings by heavy drilling equipment are examples.

The major beneficial impact of the study will be the selection of the most cost-effective and best rehabilitation alternatives for the construction of the project. The project itself will provide many benefits including water conservation, resource management, and the preservation of an existing facility. Public health will also be beneficially impacted because the Milk River is the source of drinking water for communities along the Highline.

The study will also include a NEPA compliance evaluation. This evaluation will result in an Environmental Assessment and either a Finding of No Significant Impact or the requirement for an Environmental Impact Statement.

Public Benefits Assessment

The project will provide another 50 to 100 years of operation for the Milk River Project. This project is vital to the economy of north-central and north-eastern Montana. Additionally, the project is vital to the health of communities along the Highline providing a source of drinking water.

Recommendation

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 8

Applicant Name Butte-Silver Bow Local Government
Project Name Belmont Shaft Failure and Subsidence Mitigation

Amount Requested \$ 300,000
Other Funding Sources \$ 105,823 Applicant
Total Project Cost \$ 405,823

Amount Recommended \$ 300,000

Project Abstract (prepared and submitted by applicant)

Problems with underground subsidence have been persistent throughout Butte's history as "The Mining City:" imminent public safety hazards; damage to private property and public infrastructure; and reduced land values and restricted development. Underground mining essentially ceased in Butte in 1978 when Atlantic Richfield Company (ARCO) bought Anaconda Copper Mining (ACM). Until this change, ACM had a program of filling shafts as they failed and opened at ground surface.

In the 1980s, the Montana Department of State Lands, Abandoned Mines Reclamation Bureau (AMRB), reclaimed several serious "abandoned" mines in Butte and Walkerville. The standard design to fix deep shafts generally consisted of constructing a gravel pad around the surface opening (i.e., the mine shaft collar), followed by placing of reinforced concrete panels slightly wider than the shaft to "cap" the hole.

Of the shafts AMRB capped, four have failed and need to be replaced, which is the project goal. Most notable is the Belmont shaft, approximately 4,300 feet deep and located directly adjacent to the new Butte Central Gymnasium under construction and the Butte Seniors Center. Further deterioration of the shaft will eventually destroy the historic Belmont headframe and result in serious injury and damage to adjacent properties. Other shafts failing are the Buffalo, Orphan Boy, and Otisco. All are greater than 1,000 feet deep.

If awarded, Butte-Silver Bow would complete a detailed engineering design for permanently capping these shafts in winter 2005, and solicit bids and choose a qualified contractor to complete construction during the summer of 2006. In addition to the failed AMRB caps, Butte-Silver Bow would also like to continue its current subsidence mitigation program. Since 1998, the project sponsor has effectively mitigated over 50 subsidence hazards in the Butte/Walkerville area. Funds remaining in the current program can be used to complete time-critical tasks in this project as well.

Technical Assessment

Four of the major shafts capped by AMRB in the 1980s are failing due to an inadequate design: the Belmont, Buffalo, Orphan Boy and Otisco. The Belmont is the most dramatic, as the entire cap has been consumed by the failure of the shaft, leaving a hole approximately 50 feet square by 30 feet deep. The void is directly beneath the 140-foot high historic Belmont headframe, which is scheduled for restoration under a separate RIT grant. A professional engineering study contracted by the applicant in 2001 predicted the headframe would collapse in the near future if the shaft failure beneath it were not stabilized. Should the headframe collapse, a major city street could be blocked and damaged, and negative impacts would result to property at the adjacent Butte Central gymnasium complex (west) or the Butte Seniors Center (north). The few remaining mine headframes in Butte are highly visible and unique structures, which are valuable additions to the National Landmark Historic District.

The other shafts identified in this proposal are in varying stages of failure and their conditions will steadily worsen over time if not properly addressed. This significantly increases the cost of remediation and the threat to public safety and property. Based on the type of failure currently manifesting itself in these various shafts, all AMRB caps will require long-term monitoring to promptly identify future failures so they can be addressed in time.

In addition to these major shafts, all of which exceed 1,000 feet in depth, there continues to be a problem with smaller openings, generally those 100 feet deep or less. Due to the presence of several shallow openings over the preceding years, in May of 1996, Butte-Silver Bow County submitted a successful RDGP grant proposal for \$81,250 that addresses the problem and subsequently established a county subsidence reclamation program.

Over the past seven years, the county subsidence program has been extremely efficient in mitigating cases of underground mining subsidence, having addressed over 50 hazards, in addition to obtaining a valuable collection of ACM historic underground records. Because the county has been able to successfully compel a number of responsible parties to take action and to administer efficient use of grant funds for remediation purposes where appropriate, more than half of the original grant funds are still available. In addition to in-kind services and matching funds and services from other parties, the county has been authorized by DNRC staff to use remaining funds from its original subsidence grant toward any necessary tasks outlined in this proposal that are time-critical (i.e. need to be performed before 2005 grant funds become available).

The estimated costs of completing this project are substantial, which is why Butte-Silver Bow has secured a significant amount of matching funds and in-kind services (\$105,823) to complement potential grant funds. A professional mining engineer's preliminary estimate from April 2004 ranged between \$95,000 and \$135,000 to address the Belmont shaft failure alone. Costs in the estimate include securing the site for heavy equipment; identifying and addressing all current and future sources of subsidence in the site vicinity; removing and disposing of the fallen debris of the failed cap and shaft from the void to expose the original shaft's concrete collar; and construction of an adequate concrete bulkhead and placement of backfill.

The Belmont provides an excellent example of how difficult and costly it is to address a failed shaft if (a) the problem is not addressed time critically, and (b) the problem is not addressed properly the first time. Had adequate funds been available five years ago, the cost to address the Belmont would have been approximately half of the current estimate. Estimated costs for addressing the remaining shafts are expected to be substantially less than the Belmont.

Even though the cost of the proposed project is substantial, the benefits to be accrued by completing the project within the proposed schedule appear even greater. Further degradation of the shafts inflates remediation costs, sometimes nearly double the original cost if the problem is allowed to persist to a critical condition such as at the Belmont. By completing the project now, significant dollars will be saved. In the case of the Belmont, the cost of mitigation is not the only thing to increase as conditions worsen. The threats to one of Butte's original headframes, an irreplaceable cultural and historic resource, increase as well. Butte-Silver Bow has worked hard to both restore and preserve its headframes as symbols of its rich cultural and labor history, and places high priority on protecting the headframes from damage.

Other important benefits resulting from the project are security for Butte's public and the welfare of its children. In addition, by mitigating the threats of abandoned mines, property values are not unduly devalued and the future development of Butte's brownfields are not unnecessarily restricted.

The application demonstrates that some immediate actions need to be taken to stabilize, remediate, and preserve the Belmont headframe. Further, timely attention is required at the other main sites to avoid the same level of safety problems as found at the Belmont.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|-------------------|------------------|------------------|
| Salary and Wages | \$ 0 | \$ 52,051 | \$ 52,051 |
| Employee Benefits | \$ 0 | \$ 18,218 | \$ 18,218 |
| Contracted Services | \$ 300,000 | \$ 10,000 | \$310,000 |
| Supplies and Materials | \$ 0 | \$ 10,000 | \$ 10,000 |
| Communications | \$ 0 | \$ 500 | \$ 500 |
| Travel | \$ 0 | \$ 1,000 | \$ 1,000 |
| Miscellaneous | \$ 0 | \$ 14,054 | \$ 14,054 |
| Total | \$ 300,000 | \$105,823 | \$405,823 |

The costs are well documented and based on actual bid tabulations and engineering estimates from recent, similar projects. They are reasonable for the scope of work proposed.

Environmental Evaluation

Adverse short-term impacts would occur during construction and would be limited to noise, dust, and increased traffic in an urban setting. Adverse long-term impacts have not been identified. Major long-term beneficial impacts would be realized by permanently capping hazardous mine openings, increasing protection of historical sites and aesthetics. Specific site mitigation plans were developed by DSL/AMRB during its capping effort in the 1990s. The applicant is referred to DEQ for insights on potential impacts and mitigation measures.

Public Benefits Assessment

Funds expended for this project will repair some of the most hazardous and direct consequences of historic mining remaining in Butte. One of the main legacies of mining on the Hill has been the creation of thousands of holes, many of which have the potential to open and create public safety hazards. Based on experience over the past several years, it is anticipated that from 10 to 20 new openings will occur each year.

Fixing mine subsidence problems soon after they are identified will protect public safety, guarantee safe public access to all areas of the Butte Hill and help minimize mitigation costs. Property damage will be repaired, safety hazards abated, and the benefits from this remedial work will be a long-term improvement in public safety.

Fixing subsidence problems will allow the greatest possible redevelopment of land on the Butte Hill and create significant economic benefits to the community as land is returned to productive use. More importantly, the identification and documentation work completed under this grant will provide precise records of the specific areas where redevelopment should not be allowed. The county will be able to move forward with the ongoing restoration of the community's historic and culturally significant headframes, and to move forward with any additional redevelopment plans for these

areas which currently have subsidence problems. Before these measures can advance, it is necessary to remediate hazardous mine openings in order to protect the safety of contracted employees, as well as both local citizens and tourists. Timely response resulting in permanent closure or repair of subsidence problems will also restore confidence in the physical stability of the Butte Hill and encourage redevelopment of areas being reclaimed under Superfund actions.

Recommendation

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 9

Applicant Name Pondera County
Project Name Pondera County Oil and Gas Well Plug and Abandon

Amount Requested \$ 100,000
Other Funding Sources \$ 5,926 Applicant
Total Project Cost \$ 105,926

Amount Recommended \$ 100,000

Project Abstract (prepared and submitted by applicant)

Pondera County has a significant number of stripper and/or non-productive oil and gas wells in oilfields throughout the county. Many of these wells were drilled prior to the establishment of the Montana Board of Oil and Gas Conservation (BOGC) and the development of regulations governing well and field spacing for the economic extraction of oil and gas. Due to the age of the fields in Pondera County, a large number of these wells are marginally profitable even during periods of increased oil and gas prices. In some cases, wells are now experiencing down hole problems which can potentially cause contamination to the aquifers, ground surface areas, and atmosphere from hydrogen sulfide (H₂S), carbon dioxide (CO₂), and hydrocarbon (CH₄) emissions venting from idle wells.

This project will assist small, independent producers in the plugging and abandonment of non-productive, problem wells utilizing a cost-sharing program. Wells will be cost effectively plugged utilizing the producers' knowledge and equipment. The number of problem, non-productive wells in Pondera County will be reduced. Potential environmental risks will be mitigated, and eliminating casing stubs and oil field junk will reduce hazards in cultivated fields and to agricultural equipment.

The project area includes all of Pondera County, including the Ballantine field between Conrad and Brady; the Ledger field near Ledger; the Gypsy Basin field near Dupuyer; and the Pondera and Gallup city fields, southwest of Conrad.

Technical Assessment

The problems faced by the oil industry are significant. As an extractive mineral industry, it is dependent on the price of the product, which can fluctuate greatly. In Pondera County, the small, independent producers struggle with several obstacles in attempting to maintain marginal operations. Old oilfields and ever-increasing state and federal regulations for environmental compliance and bonding requirements are the two main obstacles.

Whether the price of oil is high or low, producers are in desperate need of assistance to plug and abandon non-productive wells. During periods of increased prices, producers are more likely to have the financial assets for their share of plugging costs and thus be able to plug a larger number of wells than during periods of decreased prices. Obviously, during periods of decreased oil and gas prices, the producers' need for financial assistance would be just as critical.

Implementation of this project is expected to have the following effects:

- Reduce the number of shut in wells in an producer's inventory.
- Allow producers to continue production of producing stripper oil wells, which in turn allows them to pay taxes and royalties.

- Support the local economy; in Pondera County, this is becoming a real issue. With more main street businesses closing, the need for continuity and growth of existing businesses is crucial.
- Maintain local jobs; as businesses close, tax base is lost, jobs are lost, income to remaining businesses is reduced and reliance on county and state services is increased.
- Reduce U.S. dependence on foreign oil by maintaining economic stripper well operations and a healthy domestic oil industry in the state.
- Reduce the number of wellheads and oilfield junk that farmers are currently required to farm around. An added benefit is the addition of acreage available for agricultural use, as well as a reduction in the number of conflicts between agricultural producers and oil and gas producers.
- Mitigate environmental risks and impacts. Idle wells create environmental risks to the atmosphere, water, soil, vegetation, and wildlife, and waste precious oil and gas reserves. By plugging these wells, there is a significant reduction to these risks. The financial impact of these risks can be great due to cleanup costs.

A likely scenario if RDGP does not provide financial assistance is that these producers will ultimately be unable to maintain operations, resulting in the loss of taxes, jobs, and support to the economy. The financial liability for the plugging and restoration of wells and associated production facilities will fall to the Board of Oil and Gas and the State of Montana. Although bonds for these wells would be forfeited by the producer, the amount of the bonds will provide only limited financial assistance in the plugging and restoration process. By providing cost share assistance to producers, they are able to share in the plugging/restoration expense, will be able to maintain operations, and will continue to be a viable business to the benefit of both Pondera County and the State of Montana. Finally, the longer the wells are left unplugged, the greater the environmental risks become.

The applicant has done an excellent job of administering a \$100,000 RDGP grant approved by the 2001 Legislature; these funds are exhausted. BOGC supports the need for this project and estimates that, based on the average well depth and plugging cost per well, 55 to 60 wells could be plugged and abandoned through this project. If wells are shallower than the average depth of 1,700 feet, the grant funds and cost share would stretch further. This project reduces liability for plugging by the state and can be completed at much lower cost than if state-conducted. All work will be witnessed and inspected by BOGC.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|-------------------|-----------------|-------------------|
| Salaries and Wages | \$ 0 | \$ 4,032 | \$ 4,032 |
| Contracted Services | \$ 99,762 | \$ 0 | \$ 99,762 |
| Supplies and Materials | \$ 88 | \$ 116 | \$ 204 |
| Communications | \$ 100 | \$ 240 | \$ 340 |
| Travel | \$ 50 | \$ 50 | \$ 100 |
| Rent and Utilities | \$ 0 | \$ 900 | \$ 900 |
| Miscellaneous | \$ 0 | \$ 588 | \$ 588 |
| Total | \$ 100,000 | \$ 5,926 | \$ 105,926 |

The budget is very reasonable and has been properly developed. Cost share payments (based on the well depths encountered) should be between \$750 and \$2,475 per well. A flat rate of \$0.75 per foot for oil and gas wells and \$1.25 per foot for injection wells is proposed. These rates are reasonable. A small amount is being requested by the county to administer the grant (\$238), and the county will contribute \$5,926.

Environmental Evaluation

No long-term environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites would be expected. Compacted soil and destroyed vegetation on access routes would be reclaimed upon project completion, and any debris would be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust and emissions from combustion engines) would be minimal, if equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition.

Public Benefits Assessment

There are a number of benefits to be derived from the plugging and abandonment of non-productive wells. Primary among these is the mitigation of environmental risks to several public resources--air, water, soil, vegetation, and wildlife. By mitigating these risks, air will not be polluted by toxic and potentially lethal by-products of oil production. Groundwater and ground surface areas will not be contaminated by product leaking into or out of corroded casings. Cross contamination between aquifers will not occur, and oil and gas reserves will not be wasted. Vegetation, which is killed by the alkaline water and oil residue around well casings, will be restored. Finally, wildlife will not be adversely affected by contaminated waters.

A secondary benefit is an economic one. The primary funding source for this program is the interest income from the Resource Indemnity Trust Fund, which receives proceeds from taxes levied on mineral production. Allowing producers to utilize these funds to cost share plugging and abandonment operations will reduce the likelihood of the Board of Oil and Gas and the State of Montana and its taxpayers having to pay the costs when the producers forfeit their bonds and walk away from these wells. Providing a financial incentive to producers to plug and abandon their wells, particularly now that oil prices are rising, will allow for a greater number of wells to be plugged. When wells are plugged, producers' bonds on the wells are returned, allowing the producer to reinvest in, or expand, current operations. By reinvesting or expanding operations, producers will be able to continue paying taxes and contribute to the local economy by means of wages paid to employees. In addition, temporary employment would be available during plugging operations.

A third benefit will accrue to the agricultural industry. Reducing the number of well heads and equipment on the surface areas will allow local farmers and ranchers to farm over these areas and provide a small measure of economic assistance.

Recommendation

A grant of up to \$ 100,000 is recommended for this project, contingent upon DNRC approval of the project scope of work and budget.

Project No. 10

| | |
|------------------------------|--|
| Applicant Name | Custer County Conservation District |
| Project Name | Yellowstone River Resource Conservation |
| Amount Requested | \$ 299,965 |
| Other Funding Sources | <u>\$ 451,034</u> U.S. Army Corps of Engineers (COE) |
| Total Project Cost | \$ 750,999 |
| Amount Recommended | \$ 299,965 |

Project Abstract (prepared and submitted by applicant)

The Yellowstone River has increasingly been the focus of growing ecological, economic, social, and political concerns. These concerns are evident in a number of recent events and activities, including: the floods of 1996, and 1997, debate over the impact of stabilization activities on the river and its habitats and species, challenges to permitted actions, and, more recently, legal actions. In October of 1998, representatives of the eleven adjacent conservation districts formed the Yellowstone River Conservation District Council (council), in response to public concern and the attention focused on the river.

By accomplishing the objectives in the "Yellowstone River Resource Conservation Project," the council will accomplish a major step in the compilation of the necessary baseline information and initiation of public information and education activities, necessary to develop effective resource conservation best management practices. Because the project depends on, contributes to, and exercises local leadership in a partnership with the federal government, it is a critical step in ensuring that local and state entities play a major role in the long-term management of this great resource.

Under this proposal, the council will:

- Conduct a detailed geomorphic analysis to identify and describe river channel stability, erosion, and sedimentation and compare historic and current channel processes for select reaches;
- Assemble and process historic aerial photography in a consistent geographic information system (GIS) for use in the geomorphic analysis and other study components; and
- Conduct a cumulative effects assessment to develop an interdisciplinary scientific characterization of relationships between human activities and associated river system response.

The council's purpose is to provide local leadership, assistance, and guidance for the wise use and conservation of the Yellowstone River's natural resources. This purpose was founded on three fundamental precepts: 1) the need for sound scientific information on which to base management decisions; 2) the need for broad-based local, regional, and national input; and 3) the need for technical and financial assistance to address sustainable use issues on the Yellowstone River.

This project is a key step in completing the cumulative effects study, which will be the guiding document for all future planning in the Yellowstone corridor.

Technical Assessment

Previous decades of work done along the Yellowstone River for purposes of flood and erosion control has altered the natural floodplain of the river, and in some places increased the potential for property damage. More recently, property values along the river have risen, partially in response to increased development pressure. Government permitting agencies are increasingly called upon to authorize projects in the absence of comprehensive information regarding the nature and extent of existing projects. As a result, public and private sector environmental interests have raised issues regarding the long-term effects of channel and floodplain modification and the potential for cumulative effects. Particular attention is focused on the lack of knowledge about the long-term effects of existing and potential bank stabilization structures.

In 1999, a coalition of environmental organizations filed suit in federal district court in Billings against COE alleging that cumulative impacts were not considered prior to issuing permits for bank stabilization. The suit calls for a ban on all bank stabilization activities (unless an emergency exists) until a comprehensive study is complete. In May 2000, a federal court judge ruled that a cumulative impacts assessment (a new environmental assessment) was needed on the projects cited in the suit. In addition, it was ruled that an injunction to ongoing activity could not be enforced.

In addition to mandating development of a regulatory management plan on the Upper Yellowstone River: Congress has directed COE to prepare a comprehensive study of the entire Yellowstone River from Gardiner to its confluence with the Missouri River. The purpose of this plan is to determine hydrologic, biological, and socioeconomic cumulative affects. Funding for this effort was approved in 2003 and work is currently being contracted.

A 75 percent/25 percent, federal/local cost share agreement signed in January 2004 between COE and the council provides two essential elements in conducting a cumulative effects assessment of the Yellowstone River (1) sharing of costs with the federal government at a ratio very favorable to Montana, and (2) establishment of local leadership in the cumulative effects assessment effort. The project formulation included the identification of those disciplines relevant to the Cumulative Effects Study (CES), and the development of scopes of work for those individual studies. The signing of the cost share agreement and associated approval of the Project Management Plan marked the transition from planning and preliminary studies to commencement of the CES.

Increases in land value and associated land development will result in increasing pressure on permitting agencies trying to balance the health of the river with the landowners need to protect their property. With information about the effects of past projects, better decisions can be made. Studies such as the historical documentation and the geomorphologic study will become immensely valuable in future decisions. This data will guide the studies proposed in this application and help avoid uses on the river corridor, which would be impacted by channel movement.

The Yellowstone River is vital to the survival of the people who live in its proximity, and it provides valuable wildlife and fisheries habitat. Currently there are many questions concerning the fate of the Yellowstone River and many opinions about the cause and severity of the problems. The proposed scope of work will provide factual information and the framework to continue the open, cooperative discussion initiated by the council that will lead to strategic efforts to ensure the long-term sustainability of the Yellowstone River.

Direct cost/benefit for the work proposed here is difficult to assess, but some general conclusions can be drawn from experience. Ignoring questions and concerns will not make them go away and can result in costly legal battles and/or restoration work on the river. While the Yellowstone River may have state and national significance, decisions made affect the people who live along it. Their

input, knowledge, and cooperation are critical to any effort undertaken. Conservation districts have over 60 years experience in effectively addressing natural resource issues at the local level. They are in a unique position to develop programs and work with landowners and groups to actively pursue solutions.

If no action is taken at the state or local level, the federal government will exercise its authority to conduct its own study and impose regulations. This would circumvent the locally led process that westerners have come to recognize as their way of doing business. Unless local leadership and State of Montana involvement continue, Montana may have little influence in decisions that will affect major segments of the regional economy, as well as local tax base, and the well being of communities representing over a fifth of the state.

Confusion currently exists among the regulated public regarding authorization needed for activities within or near active stream channels; currently there are up to eight permits required from federal, state, and local entities for channel or floodplain modifications in Montana. Therefore, a primary objective of this project is a more consistent application of regulations supported by access to a common information base. The information storage and retrieval system (data clearinghouse) proposed in this application would provide a basis for evaluating individual channel modification applications submitted under a variety of regulatory programs.

The RDGP review committee feels that the project meets the definition of a "crucial state need" and warrants full funding.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|------------------|-------------------|------------------|
| Salaries and Wages | \$ 8,000 | \$ 87,000 | \$ 95,000 |
| Employee Benefits | \$ 2,000 | \$ 26,124 | \$ 28,124 |
| Contracted Services | \$260,000 | \$ 281,100 | \$541,100 |
| Supplies and Materials | \$ 25,000 | \$ 22,000 | \$ 47,000 |
| Communications | \$ 3,000 | \$ 0 | \$ 3,000 |
| Travel | \$ 1,965 | \$ 0 | \$ 1,965 |
| Rent and Utilities | \$ 0 | \$ 34,810 | \$ 34,810 |
| Total | \$299,965 | \$ 451,034 | \$750,999 |

The costs are well developed and reasonable for the work proposed. Significant match funds (\$451,034) are being contributed by the COE, DNRC, the council, and Custer County. It should be noted that the majority of these funds are in-kind contributions from participating agencies. Cash contributions, in the form of a federal appropriation, at 75 percent federal/25 percent state ratio, would yield \$900,000 in federal dollars for the RDGP grant alone. Congressional action is currently anticipated after the November elections. The total project cost (state and federal) is estimated at \$5.8 million.

Environmental Evaluation

The project is not expected to generate any short- or long-term adverse environmental impacts.

Public Benefits Assessment

Direct benefits are as follows:

- The presence of the council creates the forum to bring all effective groups to the table, through conservation district leadership, thus creating an initiative under the direction of a legal subdivision of state government.
- Completion of the activities proposed in this grant will provide base line information required to begin informed discussions.
- For the first time, scientifically based information on the status of Yellowstone River resources will be made available to the public via the Internet, tours, workshops, and a major conference.
- Informed local participation will be incorporated in the federal studies or initiatives, thereby insuring local leadership in future management decision making by state and federal agencies.
- An informed public working through coordinated local leadership can address existing conflicts regarding management of Yellowstone River resources.
- Ultimately, the information generated by this project will be used to develop best management practices to ensure that future projects in the Yellowstone River corridor achieve their objectives while protecting the area's natural resources.

The Yellowstone River is the focus of growing ecological, economic, social and political concerns. Through this grant, the council hopes to improve public awareness and understanding of the importance of sound science for environmental and economically feasible decision making and to enhance residents' capacities for broad-based and informed participation in current and future restoration and protection efforts. Debate and emotions run high on each side; hence, the public need for sound scientific data to base future river decisions on.

The Yellowstone River represents a significant and valuable natural and economic resource for some 206,260 local area residents within the 11 counties (Carbon, Custer, Dawson, Park, Prairie, Richland, Rosebud, Stillwater, Sweet Grass, Treasure, and Yellowstone). The river provides an environment that is attractive to permanent residents, tourists, and seasonal homeowners. Many varied industries rely heavily on the continued, long-term health of the river. A broad cross section of users – agriculture, natural resource industries, recreation, and market industries – depend on the river to provide the elements necessary to sustain successful operations. Consequently, the Yellowstone River and its continued health are highly valued as a regional and national treasure, while also integral to the local and regional economy.

Recommendation

A grant of up to \$299,965 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 11

Applicant Name Teton County
Project Name Teton County Oil and Gas Well Plug and Abandon

Amount Requested \$ 50,000
Other Funding Sources \$ 5,926 Applicant
Total Project Cost \$ 55,926

Amount Recommended \$ 50,000

Project Abstract (prepared and submitted by applicant)

Teton County has a significant number of stripper and/or non-productive oil and gas wells in oilfields throughout the county. Many of these wells were drilled prior to the establishment of the Board of Oil and Gas Conservation and the development of regulations governing well and field spacing for the economic extraction of oil and gas. Due to the age of the fields in Teton County, a large number of these wells are marginally profitable even during periods of increased oil and gas prices. In some cases, wells are now experiencing down hole problems that can potentially cause contamination to the aquifers, ground surface areas, and atmosphere from hydrogen sulfide (H₂S), carbon dioxide (CO₂), and hydrocarbon (CH₄) emissions venting from idle wells.

This project will assist small, independent producers in the plugging and abandonment of non-productive, problem wells utilizing a cost-sharing program. Wells will be cost effectively plugged utilizing the producers' knowledge and equipment. The number of problem, non-productive wells in Teton County will be reduced. Potential environmental risks will be mitigated, and eliminating casing stubs and oil field junk will reduce hazards in cultivated fields and to agricultural equipment.

The project area includes all of Teton County, with the Bannatyne Oil field north-east of Dutton, Runaway north- east of Farmington, Pondera & Pondera Coulee Fields south-west of Conrad, 2nd Guess north-west of Bynum, Blackleaf Canyon west of Bynum, and Highview/Bills Coulee/Gypsy Basin south-east of Dupuyer.

Technical Assessment

The problems faced by the oil industry are significant. As an extractive mineral industry, it is dependent on the price of the product, which can fluctuate greatly. In Teton County, small, independent producers struggle with several obstacles in attempting to maintain marginal operations. Old oilfields and ever-increasing state and federal regulations for environmental compliance and bonding requirements are the two main obstacles.

Whether the price of oil is high or low, producers are in desperate need of assistance to plug and abandon non-productive wells. During periods of increased prices, producers are more likely to have the financial assets for their share of plugging costs and thus be able to plug a larger number of wells than during periods of decreased prices. Obviously, during periods of decreased oil and gas prices, the producers' need for financial assistance would be just as critical.

Implementation of this project is expected to have the following effects:

- Reduce the number of shut in wells in each producer's inventory.
- Allow producers to continue production of producing stripper oil wells, which in turn allows them to pay taxes and royalties.

- Support the local economy. In Teton County, this is becoming a real issue. With more main street businesses closing, the need for continuity and growth of existing businesses is crucial.
- Maintain local jobs, as businesses close, the tax base is lost, jobs are lost, income to remaining businesses is reduced, and reliance on county and state services is increased.
- Reduce U.S. dependence on foreign oil by maintaining economic stripper well operations and a healthy domestic oil industry in the state.
- Reduce the number of wellheads and oilfield junk that farmers are currently required to farm around. An added benefit is the addition of acreage available for agricultural use, as well as a reduction in the number of conflicts between agricultural producers and oil and gas producers.
- Mitigate environmental risks and impacts. Idle wells create environmental risks to the atmosphere, water, soil, vegetation, and wildlife, and waste precious oil and gas reserves. By plugging these wells, these risks are reduced. The financial impact of these risks can be great due to cleanup costs.

A likely scenario if RDGP does not provide financial assistance is that these producers will ultimately be unable to maintain operations resulting in the loss of taxes, jobs, and support to the economy. The financial liability for the plugging and restoration of wells and associated production facilities will fall to the Board of Oil and Gas and the State of Montana. Although bonds for these wells would be forfeited by the producer, the amount of the bonds will provide only limited financial assistance in the plugging and restoration process. By providing cost-share assistance to producers, they are able to share in the plugging/restoration expense, will be able to maintain operations and will continue to be a viable business to the benefit of both the Teton County and the State of Montana. Finally, the longer the wells are left unplugged, the greater the environmental risks become.

BOGC supports the need for this project and estimates that, based on the average well depth and plugging cost per well, 22 wells could be plugged and abandoned through this project. If wells are shallower than the average depth of 3,000 feet, the grant funds and cost share would stretch further. This project reduces liability for plugging by the state and can be completed at much lower cost than if state-conducted. All work will be witnessed and inspected by BOGC.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|------------------|-------------------|------------------|
| Salaries and Wages | \$ 0 | \$ 4,032 | \$ 4,032 |
| Contracted Services | \$ 49,762 | \$ 0 | \$ 49,762 |
| Supplies and Materials | \$ 88 | \$ 116 | \$ 204 |
| Communications | \$ 100 | \$ 240 | \$ 340 |
| Travel | \$ 50 | \$ 50 | \$ 100 |
| Rent and Utilities | \$ 0 | \$ 900 | \$ 900 |
| Miscellaneous | \$ 0 | \$ 588 | \$ 588 |
| Total | \$ 50,000 | \$ 5,926 | \$ 55,926 |

The budget is very reasonable and has been properly developed per well. A flat rate of \$0.75 per foot for oil and gas wells and \$1.25 per foot for injection wells is proposed. These rates are reasonable. A small amount is being requested by the county to administer the grant (\$238), and the county will contribute \$5,926.

Environmental Evaluation

No long-term environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites would be expected. Compacted soil and destroyed vegetation on access routes would be reclaimed upon project completion, and any debris would be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust and emissions from combustion engines) would be minimal, if equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition.

Public Benefits Assessment

There are a number of benefits to be derived from the plugging and abandonment of non-productive wells. Primary among these is the mitigation of environmental risks to several public resources--air, water, soil, vegetation, and wildlife. By mitigating these risks, air will not be polluted by toxic and potentially lethal by-products of oil production. Groundwater and ground surface areas will not be contaminated by product leaking into or out of corroded casings. Cross contamination between aquifers will not occur and oil and gas reserves will not be wasted. Vegetation, which is killed by the alkaline water and oil residue around well casings, will be restored. And finally, wildlife will not be adversely affected by contaminated waters.

A secondary benefit is an economic one. The primary funding source for this program is the interest income from the Resource Indemnity Trust Fund, which receives proceeds from taxes levied on mineral production. Allowing producers to utilize these funds to cost share plugging and abandonment operations will reduce the likelihood of the Board of Oil and Gas and the State of Montana and its taxpayers having to pay the costs when the producers forfeit their bonds and walk away from these wells. Providing a financial incentive to producers to plug and abandon their wells, particularly now that oil prices are rising, will allow for a greater number of wells to be plugged. When wells are plugged, producers' bonds on the wells are returned, allowing the producer to reinvest in or expand current operations. By reinvesting or expanding operations, producers will be able to continue paying taxes and contribute to the local economy by means of wages paid to employees. In addition, temporary employment would be available during plugging operations.

A third benefit will accrue to the agricultural industry. Reducing the number of well heads and equipment on the surface areas will allow local farmers and ranchers to farm over these areas and provide a small measure of economic assistance to local farmers.

Recommendation

A grant of up to \$50,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 12

| | |
|-----------------------|---|
| Applicant Name | Toole County |
| Project Name | 2005 Plugging and Abandonment Aid to Small, Independent Oil Operators |

| | | |
|------------------------------|-----------------|-----------|
| Amount Requested | \$300,000 | |
| Other Funding Sources | <u>\$ 4,016</u> | Applicant |
| Total Project Cost | \$304,016 | |

| | |
|---------------------------|-----------|
| Amount Recommended | \$150,000 |
|---------------------------|-----------|

Project Abstract (prepared and submitted by applicant)

This project is a continuation of 1999 and 2003 funded projects. The small operators of Toole County have gotten together and independently hired Health and Environmental Management Services to write and manage the application that Toole County has agreed to sponsor. The project will request the standard 24-month contract. This third request for funding shows the interest and efforts being put forth in addressing the problems that exist in Toole County.

Small independent operators were recently defined by joint agreement between DNRC and the Montana Board of Oil and Gas Conservation (BOGC) as those operators producing 58,000 barrels or oil or less and 100,000 cubic feet of gas per year. These small operators are unable to meet BOGC requirements or the financial requirements needed to plug wells that produce marginally or have down-hole mechanical problems. Allowed to go unchecked, the number of non-economic, problem wells presents a growing liability to the state as operators forfeit bonds and cease doing business.

Application of RIT funds, paid into the fund by the operators, has been used to eliminate or reduce the growing numbers of sub-economic wells. The project has been accomplished with operator involvement specifically in the form of knowledge and equipment. This reduction of problem wells enhances environmental conditions by reducing emissions of hazardous gas (H₂S, CO₂, and CH₄) venting to the atmosphere, returns the land to productive agricultural use, and reduces the financial burden to the state.

The Kevin-Sunburst field and a large portion of Toole County exhibit the problems associated with fields produced between 1910 and 1940. Past drilling practices created an unusually large number of what are now stripper and/or sub-economic wells. The establishment of the BOGC invoked regulations regarding well and field spacing for more efficient extraction, established reservoir economics, and established bonding requirements for reclamation. Compared to the financial burden of plugging numerous wells, the bond required of operators is less, so operators shut down and abandon the rigs.

This project enables operators to meet responsibilities and BOGC requirements for plugging, while preserving self-esteem through the allocation of funds paid by the operator's company. Toole County levels of participation demonstrate the success of this approach.

Technical Assessment

This a continuation of two earlier RDGP grants Toole County received in 1999 (\$300,000) and 2003 (\$240,000) for plugging and abandonment aid to small operators. These two predecessors have resulted in the plugging of 213 wells thus far (the 2003 grant is not yet complete). At the time of this

review, approximately \$235,000 of the \$240,000 remains. The grant contract was signed 8/4/03, and approximately 123 wells have been contracted for plugging. There appears to be no reason this number will not be reached. Under the current request for funds, the actual number of wells to be plugged based upon the average well cost-share should equal approximately 123 to 264 wells. Wells are not very deep in the Kevin Sunburst Field of Toole County approaching 3,000 feet for a deep well and 1,400 feet for a shallow well, with an average depth of 1,700 feet. Wells in the eastern part of the county close to the Sweetgrass Hills would average 2,600 feet. Cost-share payments should be between \$1,050 and \$2,250, assuming that the few horizontal wells in the Kevin Sunburst are not included. Payment for these wells might be adjusted to reflect plugging depth of a vertical hole, excluding the horizontal segment of the hole. There is a sufficient number of wells to do an additional three grants based on the information furnished by BOGC. However, RDGP feels it would be prudent to base the amount of funding on the number of wells that have been plugged over the last 5 years (average 66/year). This would establish a recommended funding level of \$150,000 (including contingency).

The no-action alternative will cause oil and gas operators to channel a larger part of their net income into plugging and restoring well locations, rather than using this net income to develop new wells and stimulate older production.

The no-action alternative will leave these non-productive wells until the operator either sells out or goes bankrupt. The wells, production facilities, and pits will become BOGC's orphan well problem. The operator's bond will be forfeited, but that is sufficient for plugging only a small portion of the orphaned wells.

This is a timely and necessary project for this area of Montana. Tax base is declining as major companies leave the area. All that's left are small independent operators, with small budgets. As the price of oil and gas swings, so does the number of shut-in wells. This program will cause operators to cut their shut-in well inventories to a minimum by providing a monetary incentive or cost share to start actively plugging these wells.

If the project is funded, the Toole County Coordinator must understand that BOGC inspectors have other duties to perform and cannot witness well plugging on short notice. Additionally, if Pondera, Teton, and Toole Counties' projects are funded and ongoing, the distances to be covered by two field inspectors will be tremendous. Project coordinators and operators will have to provide advanced notification of planned plugging and attempt to maximize the number of wells plugged in an area on a given day. They must also attempt to communicate any change in operating plan to minimize lost time due to miscommunications, equipment, and weather delays.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|-------------------|-------------------|-------------------|
| Salaries and Wages | \$ 0 | \$ 2,076 | \$ 2,076 |
| Contracted Services | \$ 300,000 | \$ 113,600 | \$ 413,600 |
| Travel | \$ 0 | \$ 1,200 | \$ 1,200 |
| Total | \$ 300,000 | \$ 116,876 | \$ 416,876 |

The budget seems reasonable and is supported by the fact that Toole County has previously conducted two similar projects with small operators. Final numbers will depend on the depth of the wells plugged. The estimated cost share by the operators (\$113,600) will increase if they need to contract out some of the well services. Toole County will contract out the administration of this project to a private consultant.

Environmental Evaluation

No long-term environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites would be expected. Compacted soil and destroyed vegetation on access routes would be reclaimed upon project completion, and any debris would be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust and emissions from combustion engines) would be minimal, if equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition.

Public Benefits Assessment

The greatest public benefit to be achieved is the elimination of potential plugging liability of non-economic and mechanically unsound wells. Minimal cash outlay early on combined with operator knowledge, equipment, and expertise will greatly reduce this liability. A greater number of wells can and will be plugged without having to burden BOGC and RIT grants for large sums of money. At the same time, it will help the marginal or stripper operators to continue to pay taxes, employ people, support the local economy, and to do their part in helping to minimize the large dependence the United States has upon imported foreign oil.

The secondary effect would be to minimize possible environmental problems associated with wells left open to the atmosphere bleeding H₂S, CO₂, natural gas (methane), and other volatile hydrocarbons to the atmosphere. By plugging these wells, which would normally be left open venting to the atmosphere, these greenhouse gases would be again trapped in their formations of origins.

Another secondary effect would be to reduce the number of abandoned wellheads and equipment on the surface of the land as was accomplished by the north Toole County reclamation project. Many of these areas are now being farmed over where once there was nothing but oil field debris, pits, and sagebrush.

Recommendation

A grant of up to \$ 150,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 13

Applicant Name Montana Department of Environmental Quality (DEQ)
Project Name Zortman and Landusky Mines – Completion of Reclamation Alternative Z6

Amount Requested \$ 300,000
Other Funding Sources \$ 3,818 Applicant
Total Project Cost \$ 303,818

Amount Recommended \$ 300,000

Project Abstract (prepared and submitted by applicant)

Pegasus Gold Corporation (PGC) conducted open pit mining at the Zortman and Landusky mines between 1979 and 1996. PGC declared bankruptcy in 1998, and DEQ now oversees reclamation of the mine sites and operation of the sites' water treatment systems.

DEQ, in consultation with the U.S. Bureau of Land Management (BLM), the U.S. Environmental Protection Agency (EPA), and the Fort Belknap Indian Community, initiated preparation of a Supplemental Environmental Impact Statement (SEIS) during 2000. This SEIS re-evaluated reclamation options for the Zortman and Landusky heap leach gold mines, which had been abandoned after the bankruptcy of PGC and its subsidiary, Zortman Mining, Inc. (ZMI), during 1998/1999.

A Record of Decision (ROD) was issued in May of 2002 that identified preferred reclamation alternatives Z6 (for the Zortman site) and L4 (for the Landusky site). In both cases, the available reclamation bonds posted by ZMI were not adequate to fully fund the selected alternatives. BLM has contributed an additional \$4.2 million for the completion of L4.

Reclamation at the Zortman site was nearly completed under Alternative Z6, but one remaining component of that alternative has not been implemented due to insufficient funding. That project involves the removal of the upper portion of the Alder waste rock dump, backfilling this material into the North Alabama pit, and then placing reclamation covers over both facilities. A significant portion of this remaining Z6 task could be accomplished with funds from the Reclamation and Development Grants Program.

The goal of this project is to mitigate the effects of acid rock drainage at the Zortman mine. This can be done through completion of Alternative Z6.

DEQ is responsible for reclamation at the Zortman site.

The Zortman mine is 50 miles southwest of Malta, adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Zortman mine is located in Sections 7, 17, and 18, Township 25 North, Range 25 East, Phillips County.

Technical Assessment

The only remaining task specified under Alternative Z6 that has not been accomplished, and for which funding is not presently available, is the partial removal of the Alder Gulch waste rock dump. Alternative Z6 requires that 432,000 cubic yards (approximately the upper third of the waste rock dump) be removed and backfilled into the North Alabama pit area near the top of the ridge within

the Zortman mining complex. Both areas (the waste rock remaining in place and the backfilled waste) would be covered with liners to minimize infiltration into this sulfide waste, then covered with soil and revegetated. These actions would result in reduced infiltration into both the waste rock dump (below which a seepage capture system exists, but which currently can be overwhelmed when large storm events cause rapid infiltration of water into the waste material) and also the floor of the mine pit (which is currently bare rock and may contribute recharge to the acid-producing underground mine workings lying beneath the pit area). Also, these actions would reduce erosion potential on the Alder Gulch waste rock dump and improve the aesthetics of the upper mountain by returning these high-elevation pit walls to a more natural appearance.

DEQ is requesting a \$300,000 grant to initiate backfilling of the Zortman North Alabama pit with material from the Alder Gulch waste rock dump. These funds would be used to re-locate approximately 121,000 cubic yards of material to the pit, followed by replacement of the soil and construction of a stormwater diversion across this section of the waste rock dump. The primary benefit of this action would be to flatten the slope of the upper portion of the waste rock dump, thus reducing the potential for erosion and enhancing the vegetative cover. Peak flow rates at the seepage interception system located below the waste rock dump would likely be reduced, resulting in somewhat lower pumping and water treatment costs, and reduced risk that the pumping capacity would be exceeded during high flow events. This could reduce the probability of discharge of acidic water from the seepage interception system during major storm events.

If this grant is awarded, DEQ may be able to use the grant money as matching funds to obtain additional funding from other sources, possibly allowing for completion of the entire backfilling and capping project as described in SEIS Alternative Z6.

An alternative to initiating backfill of the North Alabama pit using these grant funds would be to continue to seek funding from other sources to complete the preferred alternative. However, DEQ considers it doubtful that any single organization would provide the entire \$1,530,000 estimated to be needed to complete the project. It is likely that contributions from many sources, including the Reclamation and Development Grants Program, will be necessary if this project is to be completed per the preferred alternative selected via the May 2002 ROD.

A second option available to DEQ would be to declare this portion of the Zortman site reclamation project complete as per the 'reserve' Alternative Z3, which meets all applicable requirements for mine reclamation. DEQ has, however, pledged to seek additional funding so that Alternative Z6 can be implemented in its entirety. Furthermore, DEQ has been sued by the Fort Belknap Tribes and other parties who allege that identification of 'reserve' alternatives in the ROD is a violation of the Montana Environmental Policy Act and that the agencies are obligated to complete the preferred alternatives. This lawsuit is pending.

DEQ and BLM have selected Alternative Z6 (out of six possible alternatives) as the preferred plan for reclamation of the Zortman site. The proposed action represents the only portion of that alternative that could not be completed with the available reclamation bond. Because this was selected as the preferred alternative, DEQ may be legally obligated to complete this project.

According to DEQ, this project needs to be implemented to reduce seepage draining from the Alder Gulch waste rock dump, and to comply with the preferred alternative selected in the May 2002 ROD by DEQ and BLM. Downstream landowners may be affected by runoff and seepage from the waste rock dump. These landowners include BLM and owners of patented claims downstream along Alder Gulch. These claims were sold by the ZMI estate, and may be developed for residences in the future. DEQ is the owner of the water treatment systems at the Zortman and Landusky sites. DEQ operates these systems utilizing inadequate funds from bonds posted by the now defunct

mining company, plus additional funding from any available sources. Affected parties include DEQ, citizens who reside in the area of the Little Rocky Mountains and who depend upon local water resources for water supplies and recreation, and Montana taxpayers who might otherwise have to fund water treatment if other funding is not obtained.

The Alder Gulch waste rock dump was developed by ZMI during the mid-1980s. Acid rock drainage began seeping from this facility around 1991, and affected a considerable reach of Alder Gulch prior to the installation of seepage capture facilities. The waste rock dump was reclaimed by ZMI with a soil cover during 1993-1994. Removal of the waste rock dump was first proposed by ZMI around 1992 when it was considering adding the material to a planned new leach pad. The reclamation plans developed by DEQ and BLM for the 1996 EIS and 2001 SEIS also recommend removal of the dump.

Currently, the quality of water seeping from the Alder Gulch waste rock dump is very poor and is expected to get worse over the next few decades as the rate of decomposition of sulfide minerals in the exposed rock reaches maturity. The waters seeping from the Zortman and Landusky mines are of poorer quality, and at the same time greater volume, than the polluted waters issuing from most abandoned mine sites in Montana.

If the Alder Gulch waste rock dump remains in its current configuration, higher infiltration rates and greater risk of erosion/mass wasting from the steep face of the waste rock dump would continue. Also there is the risk of a legal decision that the dump must be removed and backfilled into the North Alabama pit in order to comply with the agencies' preferred reclamation alternative (Z6).

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|-------------------|-----------------|-------------------|
| Salaries and Wages | \$ 0 | \$ 2,147 | \$ 2,147 |
| Employee Benefits | \$ 0 | \$ 644 | \$ 644 |
| Contracted Services | \$ 300,000 | \$ 0 | \$ 300,000 |
| Travel | \$ 0 | \$ 385 | \$ 385 |
| Miscellaneous | <u>\$ 0</u> | <u>\$ 642</u> | <u>\$ 642</u> |
| Total | \$ 300,000 | \$ 3,818 | \$ 303,818 |

Through tight fiscal control by EMB and Spectrum Engineering, Inc., and funding assistance from DNRC and BLM, the projected Zortman and Landusky earthwork bond shortfall has almost been eliminated. Initially facing shortfalls of 50 percent or more, they have successfully brought that shortfall to under \$2 million. Approval of this grant request will not complete the Z6 preferred reclamation alternative. Additional funding will be necessary.

Environmental Evaluation

The SEIS for reclamation of the Zortman and Landusky mines (Dec 2001), prepared by DEQ and BLM, documents both short- and long-term environmental impacts that may result from all of the examined reclamation alternatives.

Public Benefits Assessment

Approximately 121,000 cubic yards of material would be re-located from the Alder Gulch waste rock dump to the North Alabama pit, followed by replacement of the soil and construction of a stormwater diversion across this section of the waste rock dump. The primary benefit of this action would be to flatten the slope of the upper portion of the waste rock dump, thus reducing the potential for erosion and enhancing the vegetative cover. Peak flow rates at the seepage interception system would likely be reduced slightly, resulting in somewhat lower pumping and water treatment costs, and reduced risk that the pumping capacity would be exceeded during high flow events. This could reduce the probability of discharge of acidic water from the seepage interception system during major storm events.

This project would result in a minor reduction of the potential for the capacity of the Alder Gulch waste rock dump's pumpback system to be exceeded during major storm events. This reduces the risk of release of acidic water into Alder Gulch. Subsequent to the sale of patented mining claims in Alder Gulch by the ZMI estate, homes may be constructed on some lands downstream of this location. Future land owners may rely upon the aquifer in Alder Gulch as a drinking water supply. This project would reduce risk of impacts to this aquifer from the Alder waste rock dump.

After reclamation, portions of the Zortman and Landusky mine areas will be accessible to the public. The town of Zortman supports a year-round population, and local residents derive a significant portion of their income from tourists and recreationists. Backfilling of the North Alabama pit will improve aesthetics from some vantage points within the Little Rocky Mountains.

If this project becomes fully funded, the improved reclamation covers will result in long-term reduction of flow of contaminated water into the seepage collection, pumpback, and treatment systems. This will lower operations and maintenance costs, and reduce the risk of over-topping of the collection system and discharge of pollutants during major storm events.

Recommendation

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the scope of work and budget. RDGP funds are further contingent upon DEQ securing matching funds sufficient to complete the Z6 alternative in its entirety.

Project No. 14

Applicant Name Butte-Silver Bow Local Government
Project Name Excelsior Reclamation

Amount Requested \$129,800
Other Funding Sources \$ 51,695 Applicant
Total Project Cost \$181,495

Amount Recommended \$129,800

Project Abstract (prepared and submitted by applicant)

The principal purpose of this project is to reclaim approximately 4 acres of land impacted by mineral development in the urban corridor of Butte, Montana. Although the property surrounding the project site has been reclaimed in the past decade, primarily through the Superfund cleanup program, the subject property has not been addressed. The RIT/RDGP grant, as part of a cooperative effort, would be a vital, instrumental component to a successful project.

The project site has been clearly impacted by mineral development, yet the impacted acres have been excluded from previous reclamation actions. The land immediately adjacent to the east of the site is the Travona Mineyard, a 16.6-acre area that was reclaimed under the Superfund program in 1990. The soils were impacted by heavy metals, and also contributed to surface water contamination during storm events. The site was reclaimed with a standard, clean-soil cap and revegetation, and has generally performed well since the installation. The west border of the site is Excelsior Street, a main arterial road from the Interstate to the westside neighborhoods in Butte. The project site is a sliver of land between the reclaimed mineyard and the public roadway.

The main challenge of the reclamation project will be to address the steep topography that characterizes the land and establish erosion control vegetation. The project will involve changing the contours and importing clean topsoil, and then adding compost to existing soils to enhance plant growth. The re-grading and vegetation work should result in a stable landscape that will reduce erosion, particularly during storm events. The reclamation will also be designed to minimize costs for long-term maintenance of the project site.

The reclamation of this property will have tremendous positive impact in the neighborhood and an area that is adjacent to one of the primary gateways to the urban area in Butte.

Technical Assessment

The main goals of this project will be to mitigate adverse environmental impacts present at the site and to help prevent pollution from storm water runoff.

The main objectives will be to reduce erosion, particularly during storm events, and improve the visual appearance of the landscape. They include changing the steep slopes that characterize major portions of the project site, enhancing and improving existing vegetation, establishing new vegetation in barren areas on the site, and installing storm water control structures, as necessary. The project would involve changing contours, importing clean fill materials, and adding compost to existing soils to enhance plant growth. Another objective of the reclamation is to install measures that would minimize long-term maintenance costs.

Construction is estimated to take approximately 12 weeks, and activities would include:

- Clear and grub; remove all loose debris, and perform general cleanup.
- Salvage topsoil for reuse.
- Regrade site to desired elevations.
- Install curb and gutter along Excelsior Street to control storm water entering the site.
- Install weed control fabric and rock along the steep slope at the north end of the site where there is insufficient public land to allow recontouring.
- Import compost to achieve the desired nutrient mix in soils (fertilize and mulch).
- Enhance existing vegetation.
- Seed barren surfaces with native plants and grasses that do not require watering.
- Install 24 new trees within the project.
- Install drip irrigation system (from the 6-inch water main on the south side of Platinum Street) to water new trees.
- Reinstall fences, or install new site management features.
- Prepare a final report, including as-built drawings of the completed work.

The applicant has been unsuccessful in securing funds from Montana's Mine Waste Cleanup Bureau or the federal Superfund. These programs typically deal with safety hazards and threats to human health or the environment. The heavy metals and arsenic levels found on-site do not trigger action from the U.S. Environmental Protection Agency (EPA) Superfund. RDGP prioritizes projects in similar fashion, but allows funding for this type of project. The construction methods are straightforward and standard practice in the construction industry and present no difficulty in implementing. The project ranks at lower priority than projects that address significant threats to human health or the environment.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|-------------------|-------------------|------------------|
| Salary and Wages | \$ 6,221 | \$ 17,244 | \$ 23,465 |
| Employee Benefits | \$ 2,177 | \$ 6,034 | \$ 8,213 |
| Contracted Services | \$ 118,402 | \$ 22,080 | \$140,482 |
| Miscellaneous | \$ <u>0</u> | \$ <u>6,335</u> | \$ <u>6,335</u> |
| Total | \$ 129,800 | \$ 51,695 | \$181,495 |

The costs are well documented and based on actual bid tabulations from recent, similar projects. They are reasonable for the scope of work proposed.

Environmental Evaluation

The project is not expected to have any long-term adverse environmental impacts. It is anticipated that construction related to the implementation of this project would be completed in a single field season therefore, impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Short-term impacts would include dust and noise. Proper dust control measures such as using water sprays and limiting work to daylight hours would lessen these impacts.

Public Benefits Assessment

Beyond the environmental improvements, conducting the project would increase the likelihood that the surrounding properties can be redeveloped and help create significant economic benefits to the community as that land is returned to productive use.

Recommendation

A grant of up to \$129,800 is recommended for this project contingent upon DNRC approval of the scope of work and budget.

Project No. 15

| | | |
|------------------------------|-------------------------------------|--------------------------------|
| Applicant Name | Powell County | |
| Project Name | Wetland Reclamation and Development | |
| Amount Requested | \$ 212,950 | |
| Other Funding Sources | \$ 7,000 | Applicant |
| | \$ 15,000 | Ducks Unlimited |
| | \$ 20,000 | Montana Wetlands Legacy |
| | \$ 15,000 | Sage Resources |
| | <u>\$ 66,100</u> | U.S. Department of Agriculture |
| Total Project Cost | \$ 327,050 | |
| Amount Recommended | \$ 240,850 | |

Project Abstract (prepared and submitted by applicant)

This project will enable Powell County to reclaim and redevelop the former Garrison Phosphate Millsite as a wetlands habitat, viewing area, and outdoor classroom. Enhancing wetlands at the 43-acre site will create a significant public benefit by enhancing habitat for various wildlife species. The project is located along U.S. Interstate 90 and U.S. Highway 12 at the confluence of the Clark Fork and Little Blackfoot rivers.

The site improvements completed with these DNRC funds will reclaim land impacted by mineral development activities and will address a crucial state need for wetlands habitat improvement.

Preliminary mitigation work has been completed through private and public efforts at the former phosphate mill. Additional redevelopment tasks are needed to develop the site as a viable wetlands habitat and wildlife viewing area. The requested funds will be used by Powell County for following specific tasks:

- Removal of surface debris, limestone waste, and physical hazards.
- Conceptual design of trails, access, parking, habitat, and viewing areas.
- Engineering design of trails, access, parking, habitat, and viewing areas.
- Re-vegetation with appropriate plant species.
- Trail reconstruction.
- Road access and parking construction.
- Project marketing and website development

These tasks will restore wetland habitat, provide public viewing areas, and complete walking trails at the Garrison wetlands. The project addresses the need for wildlife viewing as identified by regional tourism studies, and wetland habitat where scientific study shows it to be much threatened. State and national administrations over the last 12 years have pledged a "no net loss" or actual increase in wetland habitat. President Bush has recently reiterated the "crucial need for wetlands." In addition, strong economic data indicates that tourism is dramatically enhanced by wetland preservation.

DNRC funding of this project will enhance the State of Montana's efforts to increase wildlife habitat, walking trails, and clean waters. This will be an exemplary project for both mineral development reclamation and wetland restoration in the Clark Fork valley and will create a tourism site where it will most benefit the state economy.

Technical Assessment

This project includes several components associated with waste removal, revegetation, and recreational facility design, construction, and marketing. The project addresses the Rocky Mountain Phosphate facility that is listed as a state superfund facility on the Montana Department of Environmental Quality's (DEQ) Comprehensive Environmental Cleanup and Responsibility Act (CECRA) Priority List. Rocky Mountain Phosphate has been defined as a "facility" under CECRA and included on the Priority List because a release or threat of a release of hazardous or deleterious substances has been documented on the property by the exceedances of screening levels and standards. Therefore, DEQ approval is required before the proposed remediation and reclamation activities can proceed.

In order for DEQ to provide any review or oversight of this project, and in order for the facility to eventually be removed from the CECRA Priority List, an interested party (e.g., Powell County) must meet the requirements of the Voluntary Cleanup and Redevelopment Act (VCRA). These requirements include completing an environmental assessment of the facility to determine the nature and extent of contamination and developing a remediation proposal. The results of these activities are submitted to DEQ as a voluntary cleanup plan (VCP). DEQ reviews the VCP, submits comments to the applicant, and reviews the revised VCP. Once DEQ deems the VCP complete, DEQ solicits public comment on the document, addresses any comments received, and approves the VCP as appropriate.

At the time of RDGP review of this application (August 2004), there remain a few unresolved concerns that DEQ has expressed to the applicant. They focus primarily on possible additional surface and groundwater samples, waste disposal, and selection of the most cost-effective cleanup method. RDGP does not view these concerns as insurmountable and feels they can be resolved by DEQ and Powell County in a timely fashion and that the project should proceed accordingly. It remains to be seen, however, whether the project can be completed within the budget as proposed, or whether the project budget will need to be increased to meet DEQ requirements. In the opinion of RDGP, a 15 percent contingency should be added to the requested budget (\$212,950 + \$27,900) for a total requested grant of \$240,850.

Financial Assessment

The total overall project budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|-------------------|------------------|-------------------|
| Salaries and Wages | \$ 20,000 | \$ 5,000 | \$ 25,000 |
| Contracted Services | \$ 186,000 | \$ 99,500 | \$ 285,500 |
| Supplies and Materials | \$ 2,500 | \$ 5,500 | \$ 8,000 |
| Communications | \$ 500 | \$ 1,000 | \$ 1,500 |
| Travel | \$ 2,500 | \$ 1,500 | \$ 4,000 |
| Rent and Utilities | \$ 1,450 | \$ 1,600 | \$ 3,050 |
| Total | \$ 212,950 | \$114,100 | \$ 327,050 |

The proposed budget appears reasonable for the work performed. Costs were derived from similar projects conducted statewide and from Powell County. There does not appear to be money set aside for DEQ oversight of the project, estimated at 10 to 15 percent of the design/construction budget (\$27,900). This amount should be added to the requested grant amount.

Environmental Evaluation

There are no long-term adverse environmental impacts associated with this proposal. Short-term impacts to area soils, water, and air are expected due to construction activity, but these can be easily mitigated by compliance with the DEQ site-approved work plan.

Public Benefits Assessment

The primary benefits of this project will be the establishment of a functional and aesthetically pleasing wildlife/wetland area. The project will also increase local commerce in a very poor community and eliminate potential environmental risks at a relatively low cost.

Importantly, the University of Montana's Institute for Tourism and Recreation reports that wildlife viewing is the top attraction for out-of-state tourism. Rocky Mountain wildlife viewing is growing faster than the population or general tourism. In Montana, attracting such visitors becomes doubly important, as two out of three visitors will return to nearby areas to hunt or fish, creating indirect benefits to the state.

Recommendation

A grant of up to \$ 240,850 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 16

Applicant Name Montana Department of Environmental Quality (DEQ)
Project Name MTS Tire Recyclers Cleanup

Amount Requested \$300,000
Other Funding Sources \$ 8,317 Applicant
Total Project Cost \$308,317

Amount Recommended \$300,000

Project Abstract (prepared and submitted by applicant)

MTS Recyclers (MTS) is an abandoned Class III solid waste management system waste tire resource recovery facility. The owner/operator of MTS declared bankruptcy, abandoned the facility, and left 300,000 waste tires.

The tires pose a great potential for a catastrophic fire. Typically, tires are difficult to ignite, but large accumulations of tires can be ignited by lightning, arson, or by a grass fire. Tire fires are difficult and costly to fight and can persist for weeks before being extinguished. Tires burn very hot and generate toxic clouds of hydrocarbon-based compounds such as benzene. The toxic smoke would affect downwind communities, including Laurel and Billings. Tire fires also produce an oily residue, which would run off and enter the Yellowstone River below via one of the several channels that originate on the site.

The tires are also an ideal habitat for skunks, mice, and mosquitoes, which can spread potentially fatal diseases such as hanta virus and West Nile virus.

DEQ proposes to reduce the risk of fire and of disease by contracting a third party to remove the tires from the site and properly dispose of them at a licensed solid waste management facility.

DEQ, which is the licensing agency for the facility, and DNRC, which is the property owner, are responsible for proper removal and disposal of the tires.

The tires are located in the SW¼ of the SE¼ of Section 25, Township 2 South, Range 20 East, Stillwater County, Montana. The site is located approximately 7 miles east of Columbus and south of Highway 10.

Technical Assessment

MTS was licensed as a Class III solid waste management system waste tire resource recovery facility in 1993 by DEQ Solid Waste Program. MTS intended to collect waste tires and process them into tire chips, which were to be sold for reuse in various applications, such as rubber modified asphalt and playground cushioning material. After operations at the facility commenced, DNRC discovered that the tires were placed on state property as a result of an inaccurate property boundary map submitted by MTS during the licensing process. After 3 years of operation, MTS refused to pay the annual license renewal fees to DEQ, and subsequently was not allowed to operate a solid waste management system without a license. All efforts by both DEQ and DNRC to have MTS pay solid waste fees or remove the tires from state property were unsuccessful. DEQ took legal action against the owner and operator of MTS, and prevailed. The judgment resulted in substantial penalties being levied against MTS. These efforts have been to no avail, however, as

the owner declared bankruptcy and abandoned the site in 1996. The individual has left the state and his whereabouts are unknown.

Now 300,000 waste tires are left at the abandoned site. The site is located in a 4-acre gravel pit on a 20-acre parcel of land. Topographically, the site is a dissected bench above the Yellowstone River. It is sparsely vegetated and, prior to being licensed as a solid waste management facility, it was used for rangeland and gravel extraction.

The approximate cost of hiring a contractor to remove the waste tires to a licensed solid waste management facility is \$300,000 or \$1.00 per tire. The direct benefit of the project will be the removal of a significant fire hazard from the environment. If ignited, a significant amount of fire fighting resources (money and personnel) would have to be expended to extinguish the burning tires. In October 2001 the cost to extinguish a fire of approximately 300,000 tires near Pablo was \$1 million. If such an event occurred at MTS, the costs would be passed on to the Montana taxpayers because the facility has no financial assurance to cover such an occurrence.

The large accumulation of tires also store water from snowmelt or other precipitation events for long periods. The water becomes stagnant, making the tires an ideal habitat for mosquitoes, which can spread the potentially fatal West Nile virus. This has been documented by EPA in the article "Mosquitoes: How to Control Them." The Center for Disease Control and several state newspapers, including the *Billings Gazette*, have predicted that south central Montana will experience an increase in the number of human and livestock cases of West Nile virus. Four deaths have occurred in eastern Montana since 2003. The tires also create a desirable habitat for skunks and mice, which can carry hanta virus and other diseases.

It seems prudent for both DEQ and DNRC to remove the tires to enhance natural resources and protect the physical and human environment from harm or degradation. If RDGP funds are available, this project should be considered for funding if no other funds are available.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|-------------------|-----------------|-------------------|
| Salaries and Wages | \$ 0 | \$ 3,927 | \$ 2,000 |
| Employee Benefits | \$ 0 | \$ 1,176 | \$ 540 |
| Contracted Services | \$ 300,000 | \$ 0 | \$ 300,000 |
| Supplies and Materials | \$ 0 | \$ 30 | \$ 300,000 |
| Communications | \$ 0 | \$ 45 | \$ 300,000 |
| Travel | \$ 0 | \$ 829 | \$ 400 |
| Rent and Utilities | \$ 0 | \$ 25 | \$ 300,000 |
| Equipment | \$ 0 | \$ 1,131 | \$ 300,000 |
| Miscellaneous | \$ 0 | \$ 1,154 | \$ 184 |
| Total | \$ 300,000 | \$ 8,317 | \$ 308,317 |

In May of 2002, DEQ submitted a request for funding for the same project. Considering the cost of inflation, the current cost estimate of tire removal (\$1.00 per tire) seems reasonable. It is imperative that DEQ select a suitable disposal site in close proximity to the abandoned tire pile and thereby minimize haul cost.

Environmental Evaluation

Short-term adverse impacts to the physical and human environment are expected due to truck traffic and heavy equipment operation. Reclamation of the pit (grading and revegetation) should provide long-term positive impact. There are no long-term adverse impacts to the environment expected.

Public Benefits Assessment

The project is protective of the public health, safety, and welfare.

The natural resources that would be affected by a waste tire fire consisting of 300,000 tires include air, surface water, and groundwater. The smoke from a tire fire at the site would impact the area within a radius of approximately 30 miles. Humans as well as wildlife and birds would be adversely affected. Surface water (i.e., the Yellowstone River) could be impacted for miles down stream if runoff from a tire fire entered its channel; an oil slick could result. Although groundwater is approximately 200 feet below the site, the soil is very porous and the potential for long-term contamination exists.

The removal of the tires from the site would also reduce the possibility of disease vectors, such as skunks, mice, and mosquitoes, from proliferating in the area. Because water collects and stagnates in them, tires are a suitable habitat for mosquitoes to breed. Any action taken to reduce or eliminate the breeding habitats for mosquitoes would reduce the possible spread of West Nile virus and benefit the people and livestock in the region.

The impact of the "no-action" alternative may not be immediate, but the potential for a disastrous tire fire exists. Such a fire would be costly to fight and would be harmful to the health of humans and wildlife. There will also be an increase in the number of mosquitoes in the area if the tires are allowed to remain on site.

Recommendation

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Part 2. Projects Not Recommended for Funding

Applicant Name Montana Department of Environmental Quality
Project Name Former Harlem Equity Co-Op Bulk Plant

Amount Requested \$285,572
Other Funding Sources \$ 20,000 Applicant
Total Project Cost \$305,572

Amount Recommended \$ 0

Project Abstract (prepared and submitted by applicant)

The former Equity Co-op Bulk Plant is an abandoned petroleum storage and dispensing facility that operated from 1969 to 1999. It is located adjacent to U.S. Highway 2, just inside the Harlem city limits (Lots 1 – 12, Block P, Alonzo Smith Addition), between residential and agricultural properties in Blaine County. The legal description for the site is as follows: NE quarter of the SW quarter of Section 18, Township 32 North, Range 23 East, Principle Montana Meridian.

In March 1997, a release of gasoline and diesel fuel was discovered. Equity Co-op's investigation revealed significant soil and groundwater contamination and off-site migration of the petroleum-hydrocarbon plume. Equity Co-op discontinued investigation and cleanup in 1999 due to financial insolvency. This contamination threatens public health through potential migration to residential properties and utility corridors, and hinders redevelopment of the property. The petroleum release is not eligible for monies from either the Montana Petroleum Tank Release Cleanup Fund or the federal Leaking Underground Storage Tank Trust Fund.

The project goal is to clean up the site by reducing the mass of petroleum contamination by removing approximately 12,000 cubic yards of contaminated soil and treating it at a nearby one-time land farm or licensed facility. Continued groundwater monitoring will be necessary to document the natural degradation of residual dissolved-phase petroleum hydrocarbons and to ensure that petroleum-contaminated groundwater is not impacting any potential receptors.

The Department of Environmental Quality (DEQ) Remediation Division will be the lead agency for this project. All work will be coordinated with the city of Harlem and Blaine County. The soil removal phase of the project is scheduled for September 2005 and should be completed within one month. The groundwater-monitoring phase of the project will continue for up to 3 years.

Technical Assessment

This project was submitted for RDGP grant funding the previous cycle (2002). The project was not approved by the 2003 Legislature. The current proposal, for the most part, mirrors the 2002 application. Several concerns expressed by the RDGP reviewers this cycle include:

1. The application does not clarify why the project does not qualify for funding from other sources, such as the Montana CECRA program, DEQ's Underground Storage Tank Fund, and the federal Leaking Underground Storage Tank program. If this type of project slips through the cracks on a technical eligibility question, then state or federal governments need to strongly consider appropriate statutory and rule changes.

2. The application is deficient in its presentation and discussion of remediation alternatives and costs. While removal of the contaminated soils seems the obvious presumptive remedy option, the reviewer is offered no adequate comparison detail and corresponding risk assessment in order to make that decision. In general, the level of detail required is no different than that required of responsible parties under DEQ regulatory programs.
3. The site characterization (on- and off-site) of groundwater is seen as lacking in several important aspects. The data on flow paths and groundwater quality and quantity are probably not sufficient to confidently guarantee no further remedial action will be needed in the future or that contamination is mitigated to the extent possible. Again, a risk assessment, alternatives analysis and cost estimates are needed.
4. Given the uncertainties in the groundwater arena, a more thorough explanation is needed as to why 5,000 cubic yards of contaminated soils material is not slated for removal.
5. If, as the application states, "the groundwater threatens a public 8-inch diameter PVC water main," (a major concern expressed by DEQ as to why the removal action is urgent), then DEQ needs to explore less expensive short-term actions that can be done to mitigate this threat until a long-term and permanent solution is fully developed and documented.
6. Screening goals that dictate the level of cleanup for water and soils needs to be included consistent with the remediation goals of protecting the public water supply, if in fact that is the ultimate goal. There is no site-specific documentation in the application.
7. DEQ and/or Blaine County efforts to compel the owner to clean up the property are not sufficiently discussed, nor are any plans presented that would convey the property to public ownership. In the event the property is sold by the private owner, a discussion that outlines cost recovery of state expenditures is needed.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|------------------|-----------------------|------------------|
| Contracted Services | \$285,572 | \$20,000 | \$305,572 |
| Total | \$285,572 | \$20,000 | \$305,572 |

The contracted services category includes construction (labor, materials, and equipment) for \$222,536 and groundwater monitoring (labor, well installation, laboratory analysis) for \$63,036. DEQ needs to furnish documentation on how these costs were derived (e.g., bid tab, company analytical costs sheets), personnel involved, and parameters analyzed. The \$20,000 match is from DEQ (ECA grant in 1999).

Environmental Evaluation

DEQ is required to conduct an environmental assessment specific to this project. It will address both short- and long-term impacts and whether they are adverse or beneficial. They will also look at measures to mitigate any adverse impacts caused by the project. Appropriate measures to prevent or mitigate any harmful impacts to the environment will be implemented.

No long-term adverse environmental impacts are anticipated in conjunction with the proposed remediation activities. Short-term impacts might include increased truck traffic, dust, and potentially some petroleum odors during construction activities, but those impacts are anticipated to be minor. During construction activities, care must be taken to avoid the accidental loss of contaminated soils or runoff into the surrounding area.

Public Benefits Assessment

In addition to the protection of human health, removal of soil contamination (or perhaps some other preferred alternative) should benefit the quality of soil, groundwater, and, potentially, surface water. Positive (yet lesser) impacts might also be provided to area wildlife and vegetation resources.

Assuming the project is carefully designed, successful completion of the project would ensure that petroleum would be removed from the soil and migration of contaminants to groundwater and potentially to surface water would be prevented. These actions would provide long-term benefits for all of the above-mentioned resources and would provide benefits to local residents and all Montanans who use the area impacted by the contamination.

Recommendation

No funding is recommended for this project.

Applicant Name Montana Department of Environmental Quality
Project Name Landusky Mine – Surface and Groundwater Interactions in Swift Gulch and Landusky Pit

Amount Requested \$300,000
Other Funding Sources \$ 35,329 Applicant
Total Project Cost \$325,329

Amount Recommended \$ 0

Project Abstract (prepared and submitted by applicant)

Pegasus Gold Corporation (PGC) conducted open pit mining at the Landusky Mine between 1979 and 1996. PGC declared bankruptcy in 1998, and the Montana Department of Environmental Quality (DEQ) now operates the site's water treatment systems using funds from short-term water treatment bonds. Significant deterioration of water quality in Swift Gulch was first noted in 1999. Because water quality impairment in Swift Gulch became evident after the bankruptcy of PGC, no reclamation or water treatment bonds had been established to address conditions in that drainage.

DEQ and the U.S. Bureau of Land Management (BLM) modified the mine reclamation plans to improve water quality in Swift Gulch. Despite efforts to that end, no improvements have been observed. Additional studies are needed to better characterize groundwater flow systems adjacent to Swift Gulch to determine the best course for further remedial actions.

The goal of this project is to improve water quality in Swift Gulch. The objective is to sufficiently characterize groundwater flow in the vicinity of Swift Gulch and the adjacent Landusky pit complex so that the relative effectiveness of various remedial options can be accurately assessed and appropriate actions can then be implemented.

DEQ, in cooperation with BLM, is responsible for implementing the reclamation program at the Landusky Mine.

The Landusky Mine is located 50 miles southwest of Malta, adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Landusky Mine is located in Sections 14, 15, 22, and 23, Township 25 North, Range 24 East, Phillips County, Montana. The Swift Gulch study area is located in Sections 10, 11, 14, and 15 of Township 25 North, Range 24 East.

Technical Assessment

Significant deterioration of water quality in Swift Gulch began in 1999, and may be a response to the deepening of portions of the Landusky pit adjacent to Swift Gulch, which occurred in 1995. Because water quality impairment in Swift Gulch became evident after the bankruptcy of PGC, no reclamation or water treatment bonds had been established to address conditions in that drainage.

In response to the noted changes in water quality in Swift Gulch, DEQ and BLM modified the mine reclamation plans, through a Supplemental Environmental Impact Statement (2001), to include partial backfill of the pits adjacent to Swift Gulch. Because this area was suspected of being the primary recharge location for the deteriorating seeps entering Swift Gulch, a liner was installed over the compacted backfill to prevent infiltration of precipitation through the pit bottom. The backfilling and capping projects were completed during 2002, but as yet no improvements to water quality in Swift Gulch have been observed.

The goal of this project is to improve water quality in Swift Gulch. The objective is to sufficiently characterize groundwater flow in the vicinity of Swift Gulch and the adjacent Landusky pit complex so that the relative effectiveness of various remedial options can be accurately assessed and appropriate actions can then be implemented. The objectives would be achieved by characterizing flow paths and travel times through the bedrock aquifer via tracer tests and pumping tests. Also, surface water/groundwater interaction along Swift Gulch would be characterized by tracer tests, isotopic evaluation of water chemistry, and assessment of the stream's capacity for natural attenuation of metals, and the 24-hour cycling of metals.

Results of the proposed tests will direct the course of future remedial actions that may be taken to address the water quality of Swift Gulch. The effectiveness of potential remedial options (e.g., seepage interception and treatment, grouting to redirect seepage, or additional reclamation capping to reduce infiltration of precipitation into potential source areas of the seepage entering Swift Gulch) will be reviewed based upon the data obtained under the proposed studies. In this way, DEQ is hoping that the most effective measures can be identified and implemented.

This project includes several hydrogeologic and geochemical studies that presumably will enhance the understanding of the hydrogeochemical setting of Swift Gulch. The study would provide improvements to the conceptual hydrologic model of the area. DEQ could then identify effective alternative reclamation measures that might improve water quality in Swift Gulch, but that are not apparent given the current knowledge of the area. Two alternatives to conducting this study were considered. First, DEQ could implement seepage interception and treatment, grouting to re-direct seepage, or additional reclamation capping to reduce infiltration of precipitation into potential source areas of the seepage entering Swift Gulch. To do so without first characterizing the hydrologic system could result in significant expenditure of funds on projects that could fail to accomplish their goals. For example, the portion of the Landusky pit complex nearest Swift Gulch was backfilled and capped with a low permeability cover to prevent infiltration into that area during 2001–2002 at a cost in excess of \$1,500,000. Although this appeared to be a logical source control measure and may have had beneficial effects, no changes in water quality trends in Swift Gulch have yet been observed as a result of this additional reclamation measure intended to address conditions in Swift Gulch.

Second, DEQ could allow the creek to remain as it is. DEQ would continue monitoring to determine whether current water chemistry trends persist or eventually reverse because of reclamation measures previously implemented, or because of depletion of sulfide minerals in the zones where oxidation is occurring, or changes in climate. If the backfill and capping conducted earlier doesn't work, this approach might allow pollution to continue, and perhaps worsen. It is not likely that sulfide oxidation will slow down in the next few years; so continued deterioration could mandate that remedial actions be taken in the future. Failure to first evaluate the hydrologic system could result in selection of remedial measures that would likely be much less effective.

There are no water quality data provided in the application to support the DEQ contention that Swift Gulch water quality levels are many times higher than human health and/or aquatic life standards. In fact, DEQ states, "the water quality in Swift Gulch improves dramatically one mile downstream from the seeps that enter the stream." DEQ has further stated that no exceedances have been observed on the Fort Belknap Reservation (another mile downstream). In other words, RDGP cannot conclude that the proposed study is needed or urgent, particularly in terms of threats to human health or the environment. A less costly and perhaps better approach might be to wait and see if previous pit backfilling of the Landusky Pit influences the water quality and quantity of the seeps.

The proposal is geared toward a better understanding of groundwater conditions in the Swift Gulch area so that appropriate remedial actions can be defined. The applicant goes on to list source control, seepage interception, and passive treatment as possible options that might be implemented. Any one of these options will undoubtedly be very expensive, raising the question, how DEQ/BLM will pay for them.

It is unclear why DEQ didn't use some of the previous funding to characterize groundwater conditions in sufficient detail prior to alternative selection and implementation.

RDGP is reluctant to recommend funds for this study, given past results. A higher RDGP priority is the funding of a project that has well-defined end results and significant matching funds contribution, as appropriate.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|---------------------|-------------------|---------------------------|-------------------|
| Salaries and Wages | \$ 0 | \$ 13,787 | \$ 13,787 |
| Employee Benefits | \$ 0 | \$ 4,136 | \$ 4,136 |
| Contracted Services | \$ 300,000 | \$ 0 | \$ 300,000 |
| Travel | \$ 0 | \$ 3,284 | \$ 3,284 |
| Miscellaneous | \$ 0 | \$ 4,122 | \$ 4,122 |
| Total | \$ 300,000 | \$ 25,329 | \$ 325,329 |

Potential outside funding sources include BLM (land manager), which is currently funding a \$60,000 study of ancient iron hydroxide (ferricrete) deposits in Swift Gulch, which may provide data addressing natural background groundwater chemistry in the area. Future funding for remedial actions that might be determined appropriate after the proposed study is concluded might also come from BLM; however, no firm commitments to provide funding for any further projects in Swift Gulch currently exist. BLM is the logical source, given its obligation to protect trust (tribal) resources, assets, and public health and safety. As a last resort, funding could also come from DEQ's annual budget request to the legislature.

Salaries, benefits, indirect costs, and travel costs of DEQ staff will be provided as in-kind contributions for the project.

Environmental Evaluation

The impacts to the environment from this study project are considered minor and short-term. Measures to mitigate any adverse impacts to soil, water, and resources will be addressed in an environmental assessment prepared by DEQ specific to this project.

Construction activities for the proposed research are limited to the installation of one high-capacity pumping well, and a minimum of two small-diameter monitoring wells. Exact well locations and specifications will be determined based on research in Swift Gulch that will be concluded in the fall of 2004. The high-capacity well will be completed with a nominal 6-inch diameter PVC screen and casing, and will be installed using a standard air-rotary drilling rig. The monitoring wells will be located in a remote, roadless area and must be constructed using portable drilling equipment, such

as a Winkie drill. Helicopter support may be required for mobilizing and de-mobilizing the portable drilling equipment.

The drilling of boreholes and construction of the wells shall, at a minimum, comply with "Monitoring Well Construction Standards," Sub-Chapters 7 and 8, Board of Water Well Contractors, Title 36, Chapter 21, MCA.

Public Benefits Assessment

After reclamation, portions of the Zortman and Landusky mining areas will be accessible to the public. The town of Zortman supports a year-round population, and local residents derive a significant portion of their income from tourists and recreationists. Good quality of drinking water and surface waters in area streams is critical to continued use of the area as a recreation destination.

Recommendation

No funding is recommended for this study.

Applicant Name Montana Department of Environmental Quality (DEQ)
Project Name Zortman and Landusky Mines – Supplemental Funding for Near-Term Water Treatment

Amount Requested \$ 300,000
Other Funding Sources \$2,593,963 Applicant
Total Project Cost \$ 636,453

Amount Recommended \$ 0

Project Abstract (prepared and submitted by applicant)

Pegasus Gold Corporation (PGC) conducted open pit mining at the Zortman and Landusky mines between 1979 and 1996. PGC declared bankruptcy in 1998, and DEQ now operates the sites' water treatment systems using funds from short-term water treatment bonds, in the amount of \$731,321.00 per year. Annual costs for operating the systems exceed the annual bond allowance by an average of \$105,000. DEQ does not have a guaranteed source of funding to meet this shortfall, and may have to temporarily cease water treatment.

The creeks that capture the water for treatment recharge alluvial aquifers, including one that provides domestic water for the town of Landusky. The creeks also recharge bedrock aquifers such as the Madison limestone, which is the public water supply source for the town of Zortman, and which may be developed for public water supplies in other communities, including Hays and Lodgepole. Interruption of water capture and treatment could cause contamination in these aquifers. Additionally, access to polluted surface water could pose health risks to wildlife and livestock, and reduce suitability of the streams for aquatic life.

The goal of this project is to ensure that water pollution at the Zortman and Landusky sites will be properly remediated. The objective is to either invest the grant funds immediately, or invoice the Department of Natural Resources and Conservation (DNRC) monthly each year after depletion of the annual \$731,321 bond increment.

DEQ is responsible for implementing the water treatment program at the Zortman and Landusky sites.

The Zortman and Landusky mines are 50 miles southwest of Malta, adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Zortman mine is located in Sections 7, 17 and 18, Township 25 North, Range 25 East, Phillips County. The Landusky mine is located in Sections 14, 15, 22 and 23, Township 25 North, Range 24 East, Phillips County.

A \$300,000 fund will allow for year-round operation of the water treatment systems for approximately three years.

Technical Assessment

Actual annual costs of operation of the water treatment systems at the Zortman and Landusky sites vary greatly depending on factors such as the quantity and timing of rainfall and snowmelt at the mine sites. However, the costs for water treatment have consistently exceeded the bond funds, averaging \$105,000 per year more than the available funding during 2000 and 2003. DEQ experiences shortages in funding for operation and maintenance of the water treatment plants annually, typically beginning between August and November. To date, the shortfall has been funded through a \$550,000 grant from the U.S. Department of the Interior, Bureau of Land

Management (BLM). Funds from that grant are nearly depleted, however, and there is no guarantee of additional funding from that source. Depletion of funding could result in an interruption of water treatment activities on an annual basis after available funds have been spent.

In addition to operating the existing water treatment systems, DEQ oversaw construction of a biological treatment plant at the Landusky site in 2001. This plant is intended to remove nitrate, selenium, and cyanide (contaminants that cannot be treated at the other facilities) from water that collects in the sites' leach pads. To date, operating costs for this treatment facility have been covered by the sites' reclamation bonds, but these bonds will soon be depleted and other sources of funds for the biological treatment plant's operation will be required.

Several options for using funding for water treatment at the Zortman and Landusky sites are possible. Following are brief summaries of these options:

1. Establish a trust fund for short-term (through 2017) treatment expenses in excess of the annual bond increment. Funds would be added to this account as they became available to DEQ through grants or other means. The initial investment would include \$300,000 received from the Reclamation and Development Grants Program, and approximately \$100,000 that DEQ recently received from an insurance claim. The claim was associated with damage sustained by DEQ-owned water treatment facilities from an August 2002 flash flood at the Zortman site. DEQ received \$107,000 from this claim. For purposes of this grant application, it is assumed that the following funds will be depleted during 2004 in order to cover water treatment expenses in excess of the bond amount: a portion of the \$107,000; interest earned on the \$107,000; interest earned on the annual \$731,321 bond increments, which are held in interest-bearing accounts for part of each year (until depleted); and the remaining \$37,324 from the BLM grant. Option A is DEQ's preferred alternative, as such a trust fund would earn interest and would be available whenever needed. Actual annual water treatment costs cannot be accurately forecast because these costs are highly dependent upon factors such as timing and quantity of annual precipitation.
2. Rather than up-front investment in a trust fund, excess annual water treatment expenses could be invoiced to DNRC after they are incurred, up to the total amount available through this grant. This would spread out the costs to the grant program over a 2-year to 3-year period, but would reduce the total water treatment funding available to DEQ by the amount of interest that could be generated during that period.
3. DEQ could continue to rely on BLM to provide funding for water treatment needs. Between 1999 and 2003, BLM has granted DEQ \$549,540 for this purpose. As of May 2004, \$37,324.84 remains available under this grant. It is anticipated that these funds will be depleted during the fall of 2004. DEQ has no assurance that BLM will continue to provide supplemental funding for water treatment at the DEQ-owned water treatment facilities, and DEQ argues that the state needs to make a good faith effort to share these expenses with BLM.
4. DEQ could request from the legislature that the agency's annual budget be increased by at least \$300,000 to address potential water treatment costs at the mine sites. This funding would likely be derived from the state general fund.
5. DEQ could temporarily cease operation of the mine sites' water treatment systems each year. This would result in violation of water quality standards in several streams, impairment of aquatic habitat, and potential groundwater pollution.

Operation of the water treatment plants at Zortman and Landusky reduces the loading of metals (including arsenic, cadmium, copper, iron, and zinc) to affected streams by 90 to 99 percent. The direct benefits of this project are continuation of water protection and fulfilling of the Consent Decree signed by PGC, DEQ, EPA, and the Fort Belknap Tribes.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|--------------|------------------|---------------------------|--------------------|
| Investment | \$300,000 | \$2,293,963 | \$2,593.963 |
| Total | \$300,000 | \$2,293,963 | \$2,593,963 |

The budget for this project is based on water treatment cost projections prepared by Spectrum Engineering, Inc., in cooperation with DEQ and BLM. Actual costs may vary. Annual expenses are strongly dependent on factors such as timing and quantity of precipitation. Costs are anticipated to rise when reclamation of the mine sites is completed because water treatment plant operators and other site management personnel currently divide their duties between water treatment and reclamation management obligations. Once reclamation is complete, their entire salaries will be paid from water treatment funds. Other factors which may increase the costs of water treatment include inflation and increasing levels of acidity in seepage derived from mine wastes. Factors that may lower water treatment costs subsequent to completion of reclamation include reduction of infiltration into mine waste facilities due to capping, revegetation, and associated increases in evapotranspiration.

DEQ will contribute approximately \$100,000 over the 2005–2007 period (as described above), plus the annual bond increment of \$731,321 (\$2,193,963 plus interest over three years). The application shows the approved budget for operations and maintenance of the Zortman and Landusky water treatment plants for 2004. This represents a 'reasonable worst case' budget associated with greater than normal precipitation. Actual annual costs over the past four years have been lower than this budget by approximately \$270,000 on average. If additional funds beyond those presently identified are required to operate the water treatment facilities during that time period, DEQ has not yet identified where within its budget these funds would be derived. Additional future funding may come from BLM's Abandoned Mine Lands funds, other grants, or state or federal taxes.

Environmental Evaluation

The investment of these funds will not have any short- or long-term adverse impact on the environment.

Public Benefits Assessment

Water treatment will repair and mitigate damage to the environment caused by irresponsible mine operators and will help ensure protection of the local area's surface and groundwater resources. A revival in local recreation and tourism, an important part of the Zortman community economy, is an expected result of the eventual cleanup and reclamation of the Zortman and Landusky mine complex.

Recommendation

No funding is recommended for this project. RDGP is not intended to be a source of funds for agency operational expenses.

| | | | |
|------------------------------|---|-----------|--|
| Applicant Name | Montana State University | | |
| Project Name | Geologic Potential of Carbon Sequestration in Montana | | |
| Amount Requested | \$ 299,166 | | |
| Other Funding Sources | <u>\$ 136,088</u> | Applicant | |
| Total Project Cost | \$ 435,254 | | |
| Amount Recommended | \$ | 0 | |

Project Abstract (prepared and submitted by applicant)

This project will focus on the potential for geologic sequestration of carbon dioxide (CO₂) in formations in Montana and the associated economic benefits to communities in Montana and to the state. It will be a two-year, statewide project, conducted as a joint effort by Montana State University-Bozeman (MSU) and Montana Bureau of Mines and Geology (MBMG), which is part of Montana Tech-University of Montana.

Carbon sequestration offers the opportunity to reduce atmospheric CO₂ concentrations derived from fossil fuel combustion. The project will be in cooperation with the Big Sky Carbon Sequestration Partnership, which is assessing opportunities and markets for both terrestrial and geologic sequestration of CO₂ in Idaho, Wyoming, Montana, and South Dakota. This project will serve as a mechanism to bring the geologic expertise of the MBMG into the existing U.S. Department of Energy (DOE) regional carbon sequestration partnership in order to focus on specific geologic sequestration opportunities in Montana and undertake an analysis of the associated net economic benefits to communities in Montana and to the state of Montana. The current DOE Big Sky partnership is a multidisciplinary team of state governments, national laboratories, industry, landowners, universities, and tribal nations funded by a grant from DOE under Phase 1 of a CO₂ Sequestration Research Program. The goal of these partnerships is to form a core nationwide network to help determine the best approaches for capturing and storing gases that can contribute to global climate change. This effort on the part of DOE supports the President's Global Climate Change Initiative goal of reducing green house gases intensity by 18 percent by 2012, and will help ensure that a suite of commercially ready sequestration technologies are available for the 2021 technology assessment mandated by the Climate Change Initiative.

The geographical differences in fossil fuel use and sequestration sinks across the United States dictates that regional approaches for addressing sequestration will be different and tailored to the specific areas. Because of limited resources and the large area under consideration, the (DOE) Big Sky partnership's research is ranking 111 geologic sequestration plays based on a few key pieces of site-specific data. There is a need to test sequestration models on sites that are more intensely characterized. Therefore, MBMG and MSU propose to collect more detailed data sets to determine the sequestration potential of various plays in Montana. These data will be categorized into a GIS-based format and made available to other users.

The goals of the project are to 1) develop methods of screening that will lead to selection of the most favorable potential sites for geologic sequestration in Montana based on detailed geologic, political, cultural, and environmental criteria; 2) select a subset of specific sites in Montana for geologic CO₂ sequestration demonstration projects based on verifiable methods and criteria; 3) develop geologic project protocols and standards in response to greenhouse gas emission reduction policies; and (4) provide some initial estimates of the net benefits to the State of Montana from the deployment of sequestration technologies in the state. These benefits will arise from both the local economic development opportunities as well as the potential benefits of programs/markets for geological sequestration to offset GHG emissions.

Technical Assessment

There is little evidence in the application, if any, to conclude that the proposal represents an urgent and critical need for the State of Montana. The specific scope of work and outcomes are vague and leave reviewers with a multitude of questions. Key among the concerns are:

1. DOE has awarded a \$1.9 million grant to MSU to study and develop much, if not all, of the geologic sequestration effort proposed here. Again, in the absence of application specifics, reviewers cannot distinguish discrete work items and assess their importance.
2. One stated purpose of the project is to bring the technical expertise of Montana Tech into the partnership, and thereby strengthen a proposed Phase II DOE funding application. Why can't this be done without an RDGP grant?
3. The proposal is lacking in its discussion of other alternatives considered. For instance, comparison of the proposed effort with the current DOE grant and the proposed National Energy Technology Laboratory EIS needs to be discussed. The proposal, in citing the case for need and urgency, refers the reader to several federal websites for more information. These sites point out that there exists intense effort both regionally and nationally that has direct bearing and applicability to the proposed project and seems to duplicate, or nearly so, much of the proposed scope of work.
4. The applicant plans to submit an application for Phase II of the DOE funding in fall 2005. It is very unlikely that any conclusions or sites that have been characterized in more detail by the proposed project would be complete.
5. The following sections of the application are incomplete and do not contain sufficient information to conduct a thorough analysis:
 - a. Cost/Benefit Analysis. To date, there has not been a sizable sale of carbon credits, either terrestrial or geologic. Until there is, it is difficult to conclude that either will be an important source of income for Montana.
 - b. Project Alternatives. This is not discussed
 - c. Scope of Work. This is vague and contains considerably less detail than the DOE grant – currently under way.
 - d. Project Schedule. Not easily distinguishable between what has already been done and what hasn't.
 - e. Budget. The work that is proposed can likely be conducted at much lower cost.
 - f. Public Benefit. Until Montana realizes substantial benefit from what is already occurring in soil carbon sequestration, the benefits listed are very speculative.
 - g. Need/Urgency. Totally insufficient. Reference to a DOE website does not convincingly illustrate why the project is needed now in Montana.

- h. Crucial State Need. The applicant fails to address why this project captures an extraordinary benefit that would otherwise be lost. Further, it does not discuss why the project is of critical importance to Montana.

Financial Assessment

The total overall budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|-------------------|-------------------|-------------------|
| Salaries and Wages | \$ 35,364 | \$ 0 | \$ 35,364 |
| Employee Benefits | \$ 9,150 | \$ 0 | \$ 9,150 |
| Contracted Services | \$ 249,652 | \$ 0 | \$ 249,652 |
| Supplies and Materials | \$ 500 | \$ 0 | \$ 500 |
| Communications | \$ 500 | \$ 0 | \$ 500 |
| Travel | \$ 4,000 | \$ 0 | \$ 4,000 |
| Miscellaneous | \$ 0 | \$ 136,088 | \$ 136,088 |
| Total | \$ 299,166 | \$ 136,088 | \$ 435,254 |

All but \$10,000 of the \$136,088 match is MSU and Montana Tech not charging indirect costs to the grant. As stated earlier, there is no way to make a valid analysis of project costs due to the fact that the scope of work contains little detail. Since much of it appears to be very similar to work being done under the DOE grant, the costs charged to RDGP cannot be substantiated.

Environmental Evaluation

No short- or long-term environmental impacts are expected from this research project.

Public Benefits Assessment

At this stage, the public benefits of this project are minimal. In the opinion of RDGP, nothing will change this assessment anytime soon. A better picture of carbon sequestration potential in Montana should evolve after the DOE grant and EIS are completed.

Recommendation

No funding is recommended for this project.

Applicant Name Sheridan County Conservation District
Project Name Protecting Natural Resources by Reclaiming Oilfield Brine-Contaminated Soils

Amount Requested \$206,069
Other Funding Sources \$ 6,300 Applicant
\$ 19,950 Landowners
\$ 14,855 Montana Bureau of Mines and Geology
\$ 30,000 U.S. Fish and Wildlife Service
Total Project Cost \$276,724
Amount Recommended \$ 0

Project Abstract (prepared and submitted by applicant)

Oilfield brines migrating from reserve pits and other oilfield sites have contaminated soil and groundwater at many locations in Sheridan County. Landowners have reported increasing problems with contaminated soils and water resources overlying and adjacent to oilfield sites in Sheridan County. These problems include sterile soils, contaminated wells, sinkhole development, and accelerated erosion. Wetlands and wildlife habitat have also been degraded.

Sheridan County Conservation District has been compiling locations of many oilfields over the past several years. Most of the problems were not as apparent during the dry climatic conditions of the 1980s, but the effects of the contamination have become obvious during the more normal climatic conditions of the 1990s. A more moist climatic cycle will likely cause greater problems than are currently observed. Wastes associated with hydrocarbon production have been typically disposed on or near each drilling site in north-eastern Montana. These wastes are generally buried in lined reserve pits, but commonly the liners are breached, allowing the salt-saturated mud to move into unlined trenches. Based on conservative estimates of pit volume and brine concentrations, each pit contains as much sodium chloride salt as a 260-ton salt block.

Brines are extremely mobile, and only infiltrating snowmelt or rainfall dilutes the salt load. The rate of dilution is very slow, and high concentrations of salt can be found both in the soil and groundwater below a site for decades. Migration of brine results in salt-contaminated soil and groundwater off site. Upward migration of salt is common in areas with high water tables, resulting in the movement of salt into the soil, effectively sterilizing the soil so that it cannot support vegetation. This project proposes to mitigate salt contamination by removing the source, isolating the contamination, or other means to restore soil productivity and to maintain groundwater quality.

Technical Assessment

This is the same project submitted by Sheridan County CD during the 2002 RDGP grant cycle. The 58th Montana Legislature approved \$150,000 to conduct the project. Due to funding shortfalls in the RDGP, the reduced amount of \$98,351 was approved by DNRC. A contract for the scope of work was subsequently signed on 9/12/03. To date (September 2004), there has been no indication that work has started. There has been no disbursement of funds, nor has the grantee notified DNRC of project startup. This is viewed by DNRC ranking team as a potentially serious shortfall that influences review and approval of the current funding request. No further funding is recommended until implementation and result/recommendations are forthcoming from the 2003 grant. These deliverables can then be put in context with the current application.

Financial Assessment

The budget is difficult to review because it is not known how the original \$98,351 will be expended. The proposal is not clear on just what tasks, if any, will continue, which have been completed, or which have yet to be initiated. The 2002 funding request amounted to \$299,950 (\$98,351 of which was funded based on a reduced DNRC recommended funding amount of \$150,000). The scope of work and budget were revised and prioritized by DNRC accordingly. The current (2004 request) asks for \$206,069, presumably to offset the shortfall in the 2002 contract. The overall project budget for this project consists of the following:

| | RDGP | Matching Funds | Total |
|------------------------|-------------------|------------------|-------------------|
| Salaries and Wages | \$ 4,500 | \$ 4,500 | \$ 9,000 |
| Employee Benefits | \$ 1,800 | \$ 1,800 | \$ 3,600 |
| Contracted Services | \$ 196,769 | \$ 64,355 | \$ 382,940 |
| Supplies and Materials | \$ 1,000 | \$ 0 | \$ 2,000 |
| Travel | \$ 2,000 | \$ 0 | \$ 1,500 |
| Total | \$ 206,069 | \$ 70,655 | \$ 276,724 |

When you compare these totals with the 2002 request and the actual amount contracted, significant changes are noted both in RDGP budgeted funds and matching contributions. The rationale behind these changes is not apparent from the application. In particular, it is unclear why reclamation costs decreased and assessment costs increased dramatically for both RDGP and match sources when there is no appreciable difference in the scope of work.

Environmental Evaluation

The project would be designed to mitigate damage to soil and aquifers. No long-term adverse environmental impacts are anticipated in conjunction with the proposed reclamation for either on-site or landfill disposal options. Short-term impacts might include soil and vegetation disturbance at the sites, but those impacts are anticipated to be temporary and could be easily mitigated. Emissions would be generated from combustion engines and vehicular traffic, and the potential for leaking oil and other fluids on the ground surface would increase. These impacts would be relatively minor and could be easily mitigated or avoided by using well-maintained equipment, dust suppression, and site grading and restoration after the project is complete.

Public Benefits Assessment

Benefits could be substantial to individual landowners participating in the project if large impacted areas are brought back into agricultural production by eliminating soil contamination. Additional public benefits could accrue to affected landowners and others in terms of improved groundwater and surface water quality, aquatic resources, and wildlife habitat. Other public benefits would be possible from eliminating safety issues associated with subsidence at reserve pits and potential human health effects from consuming contaminated groundwater at the most contaminated sites.

Recommendation

No funding is recommended for this project.

CHAPTER III

STATUS REPORT OF 1997 - 2003 PROJECTS

This chapter briefly summarizes the status (as of October 1, 2004) of active projects and projects that have been completed since preparation of the January 2003 Legislative Report. The projects are grouped according to the year in which they received legislative approval; within each grouping, the projects are presented in the order of their relative funding priority.

Projects Approved by the 2003 Legislature

1. Big Horn Conservation District / State-Line Groundwater Monitoring Network for Tongue and Powder River Watersheds

The purpose of this project is to complete the installation of a groundwater-monitoring network for long-term assessment of coal bed methane impacts to (and recovery of) Montana aquifers. Drilling locations have been determined and a detailed lithologic and well completion prospectus has been prepared for each site. A detailed list of geologic and hydrogeologic publications that covers each drill site has been accumulated and used for developing the drilling plans. The drilling contract has been awarded and drilling is scheduled to begin in mid-October 2004. Permits for access to state and BLM lands are in the final preparation stages, with preliminary approval in hand. Access to private land has been arranged where necessary. Groundwater monitoring at existing wells in the project area has been underway since the beginning of the project. Monitoring data are being updated as collected. The data are available online (<http://mbmggwic.mtech.edu/>) and automatic hydrographs and maps can be generated for the viewer at this web site.

2. Sunburst, Town of / Water Supply Renovation

A contract for this project was signed in July 2003 for \$185,249. The scope of work includes a well inventory, hydrological assessment, unused pump removal, sampling and inspection of existing water wells, plugging of unused wells, and well renovation; all with the objective of providing a reliable town water supply. The project has recently commenced and no problems have been reported.

3. Governor's Office of Economic Opportunity / Growing Carbon: "Applying Market-Based Conservation through Carbon Sequestration"

The purpose of this project is to establish a process to market carbon credit trades nationally through the National Carbon Offset Coalition (NCOC). As of October, the final draft of the NCOC Project Planning Handbook is 95 percent complete and distributed to members of the DOE partnership and others for review. The handbook contains the draft protocols and standards for forestry and cropland carbon credits, and the draft portfolio design. Draft affiliate agreements, listing agreements, and contracting documents were completed and made ready for review by the NCOC board of directors, and the Internal Revenue Service. An exclusive marketing contract was signed between the NCOC, and NatSource of New York to market projects in the yet to be implemented pilot portfolio on the Chicago Climate Exchange and other emerging markets. Marketing began on the first scheduled tribal project planning workshop in Spokane, Washington and the first private lands workshop in Post Falls, Idaho, both in January 2005. The project is expected to be complete by July 2006.

4. Board of Oil and Gas Conservation / 2003 Orphaned Well Plug and Abandonment, and Site Restoration

The purpose of this project is to perform well plugging and site restoration at well sites in Stillwater and Yellowstone Counties. A contract has been executed, but work has not yet started.

5. Toole County / 2003 Plugging and Abandonment Aid to Small, Independent Oil Operators

The purpose of this project is to cost-share with small oil and gas operators the cost of plugging shut-in wells. Approximately 120 operators have pledged to participate in the project. Implementation of this project has been slower than expected due to the high prices of oil now received per barrel. The project is expected to be complete by July 2005. In order to spend all of the \$240,000 appropriation for the grant, small operators will need to accelerate their plugging efforts.

6. Board of Oil and Gas Conservation / 2003 Northern District Orphaned Well Plug and Abandonment, and Site Restoration

The purpose of this project is to perform well plugging and site restoration at well sites in Glacier, Pondera, and Toole Counties. The project is over 50 percent completed and is expected to be finished in July 2005.

7. Board of Oil and Gas Conservation / 2003 Southern District Orphaned Well Plug and Abandonment, and Site Restoration

The purpose of this project is to perform well plugging and site restoration at well sites in Musselshell, Stillwater, and Wheatland Counties. The project is over 75 percent completed and is expected to be finished in July 2005.

8. Department of Environmental Quality / Washington Mine and Millsite Reclamation

The purpose of this project is to reclaim an abandoned hard rock mine site near Wickes. The project has not yet been contracted.

9. Powell County / CMC Roundhouse Site Cleanup

The purpose of this project is to clean up petroleum and other contaminants at the abandoned Chicago-Milwaukee Railroad Roundhouse Facility in Deer Lodge. A contract for this project has been executed. A consultant has been retained to work with DEQ on the development of a voluntary cleanup plan. Required land transfer to the county is nearing completion.

10. Department of Environmental Quality / Drumlummon Tailings, Goldsill Mine Waste Reclamation

The purpose of this project is to reclaim an abandoned mine site near Marysville. The project has not yet been contracted.

11. Sheridan County Conservation District / Protecting Natural Resources by Reclaiming Oil-Field Brine-Contaminated Soils

The purpose of this project is to reclaim brine-contaminated oilfield wellsites in Sheridan County. Site assessments were initiated at about 20 sites. Data are currently being processed. Initial electromagnetic conductivity surveys have been conducted at four of the most contaminated sites. A technical advisory committee was developed with representatives of BOGC, the Natural Resource Conservation Service, U.S. Fish and Wildlife Service, USGS, Sheridan County CD, and MBMG. Representatives of this committee have met several times to discuss field results and to prioritize sites for future work and reclamation.

No funds have been disbursed and the county has yet to reclaim any sites. The implementation of the project was revised to accommodate the reduced funding level of \$98,351.

Projects Approved by the 2001 Legislature

1. Board of Oil and Gas Conservation / 2001 Eastern District Orphaned Well Plug and Abandonment, and Site Restoration

A contract was signed in November 2001 providing funds for well plugging and abandonment in Petroleum, McCone, Richland, and Roosevelt Counties. All work was successfully completed in December 2003.

2. Board of Oil and Gas Conservation / 2001 Northern District Orphaned Well Plug and Abandonment, and Site Restoration

A contract was signed in November 2001 providing funds for well plugging and abandonment of 11 wells in Fergus, Hill, and Toole Counties. All work was successfully completed in December 2003.

3. Montana Department of Environmental Quality / Development of a Trust Fund to Ensure Long-Term Water Treatment at Zortman and Landusky

The agreement between DNRC and DEQ for augmenting the Zortman / Landusky water treatment trust fund was signed on August 6, 2002. In addition to the \$300,000 of RDGP funds, DEQ also received \$540,000 of RIT funds to be put toward the purchase of a zero-coupon bond which, when added to the existing trust fund, resulted in the fund having a value at maturity (year 2017) of \$15 million. The funds were transferred to DEQ in December 2002 and the project is complete.

4. Powell County / Ontario Wet Tailings Reclamation

This project was terminated by the 2003 Legislature.

5. Lewistown, City of / Reclamation of Brewery Flats on Big Spring Creek

The contract for this project was signed in May 2002 (\$292,740). A request for an extension was granted, extending the expiration date to May 2005. The city is working on a revised cleanup plan in conjunction with DEQ. The revised plan will likely require removal of additional contaminated soils from the site. A balance of \$39,140 remains. Additional funding will be required to meet the DEQ cleanup requirements.

6. Broadwater Conservation District / Big Belt Mine Reclamation Project

Construction of this project has not been completed. Currently, the grantee and the U.S. Forest Service are in the process of reclaiming portions of placer mine sites located in Avalanche, Confederate, and Magpie Gulches, just east of Canyon Ferry Lake. Work is expected to be complete in the fall of 2004.

7. Deer Lodge, City of / Former Chicago, Milwaukee Railroad Passenger Fueling Area

The purpose of this project was to cleanup petroleum contamination at the Former Chicago-Milwaukee Railroad Refueling Facility. Sump and piping removal, drainage ditch backfill, and monitoring well installation have been completed and the project was closed in June 2004.

8. Butte-Silver Bow County / Upper Clark Fork Basin; Superfund Technical Assistance

The purpose of this project is to provide technical expertise to local officials regarding Superfund issues in the counties of Deer Lodge, Granite, Powell, and Silver Bow. A contract was executed for this project in June 2004. All work is progressing smoothly and the project will be completed in July 2005.

9. Board of Oil and Gas Conservation / 2001 Southern District Orphaned Well Plug and Abandonment, and Site Restoration

A contract was signed in November 2001 providing funds for plugging and abandonment of 11 wells in Musselshell, Petroleum, Sweet Grass, and Yellowstone Counties. All work was successfully completed in December 2003.

10. Custer County Conservation District / Yellowstone River Resource Conservation Project

A \$299,977 grant was authorized by the 2001 Legislature, and a grant agreement was executed in September 2001. A total of \$106,810 has been disbursed. Initial inventories have been completed, including rapid aerial assessments, from the Park County-Sweet Grass County border to the Montana-North Dakota line and agreements (for cost share) with the U.S. Army Corps of Engineers (COE) have been completed. Based on changes in previously scheduled activities made necessary by the lengthy period of negotiations with COE, amendments to the scope of work and budget were finalized in August 2004. The project is scheduled for completion in July 2005.

11. Montana Department of Environmental Quality / Organic Soil Amendments

This project added organic amendment material to cover soils at the Zortman and Landusky Mines. All work was successfully completed in June 2004.

12. Montana Department of Environmental Quality / Coal Bed Methane Gas EIS

This grant provides funds to complete an environmental impact statement (EIS) for coal bed methane development in Montana. BOGC and BLM were co-project participants. A final EIS, public hearings, and the comment period have been completed. The project was completed in January 2003.

13. Glacier County / 2000 Glacier County Plugging and Abandonment Aid to Independent Operators

This grant provides funds to cost-share with small, independent oil and gas operators the cost of plugging and abandoning orphaned wells. The project progressed slowly because of the lack of participating small operators. The grant was terminated in October 2004.

14. Pondera County / Oil and Gas Well Plug and Abandonment Project

This grant provides funds to cost-share with small, independent oil and gas operators the cost of plugging and abandoning orphaned wells. Fifty-six wells were plugged. The project was completed in October 2004.

Projects Approved by the 1999 Legislature

1. Fergus County Conservation District / Central Montana Artesian Basin Groundwater Project

The project has been contracted, and plans are being formulated to continue plugging of artesian wells through spring of 2005. A total of \$150,000 was authorized for this project and the project is two-thirds complete.

2. Park Conservation District / Upper Yellowstone River Cumulative Effects Investigation

A \$299,443 grant was authorized by the 1999 Legislature. This project was contracted in October 1999 to conduct scientific and engineering investigations in support of the cooperative analysis and monitoring of cumulative effects of proposed river channel modifications on the upper Yellowstone River. The project was completed in December 2003, and all funds were expended.

3. Butte-Silver Bow Local Government / Mining City Mineyard Preservation and Enhancement

A \$297,104 grant was authorized by the 1999 Legislature. A grant agreement was executed in September 2000. A total of \$90,701 in grant funds has been disbursed. This project is part of the overall development of a Mining Heritage Park in Butte. This project has four main goals: (1) maintain and maximize the safety of 10 existing headframes, (2) restore partial function to the Steward headframe, (3) gain down-shaft access to the Steward shaft, and (4) establish an experience-based education program that will provide an ongoing capability to maintain and enhance Butte's historic headframes.

This project was not contracted until September 2000 to accommodate Butte's intention to use partnering non-profit organizations offering significant volunteer labor. A strategic decision to acquire a man-lift for the three-year project (vs. leasing the equipment), delayed construction until 2000. The Anselmo headframe was restored in 2001, the Steward headframe in 2002, the Travona and Orphan Girl headframes in 2003; more than 50 percent of the restoration is complete on the original headframe, and construction was begun at the Mountain Con and Bell Diamond in 2004. An extension through October 2005 was granted based on experience to date.

4. Townsend, City of / East Pacific Mine Reclamation

This project was terminated by the 2003 Legislature.

Projects Approved by the 1997 Legislature

1. Montana Department of Natural Resources and Conservation / Reliance Refinery Soils and Sludge Cleanup

This project was originally contracted in August 1997. A cleanup plan for this site, located in Kalispell, has not been finalized. Project implementation was complicated by the existence of potentially liable persons on adjacent lands. DEQ has notified DNRC that they do not have the staff to review this project in a timely fashion. DNRC terminated this project in June 2004.

2. Butte-Silver Bow Local Government / Mine Subsidence Reclamation

This work has been instrumental in the effort to address many of Butte's most critical subsidence problems. With the acquisition of additional underground mining records, the project sponsor expects to expend all grant funds by the end of the 2004 construction season.

2005

Montana Department of Natural Resources and Conservation



1625 Eleventh Avenue
P. O. Box 201601
Helena, Montana 59620-1601
(406) 444-6668

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